

TOWARD NEW THINKING ABOUT OUR CHANGED AND CHANGING WORLD A FIVE-YEAR CGSR PROGRESS REPORT

BRAD ROBERTS



Center for Global Security Research
Lawrence Livermore National Laboratory
October 2020

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This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory in part under Contract W-7405-Eng-48 and in part under Contract DE-AC52-07NA27344. The views and opinions of the author expressed herein do not necessarily state or reflect those of the United States government or Lawrence Livermore National Security, LLC.
ISBN-978-1-952565-04-5 LCCN-2020917408 LLNL-MI-815280 TID-59959

Contents

About the Author. **3**

Introduction. **4**

Major Power Rivalry and Deterrence **6**

New Regional Challenges and Challengers **52**

Toward Integrated Strategic Deterrence **62**

The Future of Long-Term Cooperative Measures to Reduce Nuclear/Strategic Dangers . . **80**

The Future of Long-Term Competitive Strategies. **104**

Next Steps **122**

About the Author

Brad Roberts is director of the Center for Global Security Research at Lawrence Livermore National Laboratory, a position he assumed in 2015. From 2009 to 2013, he served as deputy assistant secretary of defense for nuclear and missile defense policy. In this capacity, he served as policy co-director of the Obama administration's Nuclear Posture Review and Missile Defense Review. From 2013 through 2014, Dr. Roberts was a consulting professor at Stanford University and William Perry Fellow at the university's Center for International Security and Cooperation. While there, he authored *The Case for U.S. Nuclear Weapons in the 21st Century* (Stanford University Press, 2015), which was subsequently recognized with a Choice Award for outstanding academic publication of the year.

From 1995 to 2009, he was a member of the research staff at the Institute for Defense Analyses in Alexandria, Virginia. From 1983 to 1995, he was a research fellow at the Center for Strategic and International Studies, where he also served as editor of the *Washington Quarterly* from 1986 to 1995. He holds a B.A. from Stanford University, an M.Sc. from the London School of Economics and Political Science, and a Ph.D. from Erasmus University, Rotterdam.



Brad Roberts, CGSR Director

Introduction

The Center for Global Security Research (CGSR) was founded in 1994 to serve as a bridge between the technical and policy communities. Its core mission is to ensure that each community has some understanding of the perspectives and priorities of the other. In its first decade, the Center focused heavily on defining the realm of the necessary and possible for cooperative threat reduction with the post-Soviet states. In its second decade, the Center's interests expanded to include proliferation and nonproliferation. In 2015, it set out on a new course. In order to come to terms with a changed and changing security environment, it re-focused on the new issues of deterrence, assurance, and strategic stability. This change followed in part from the conviction of Lawrence Livermore National Laboratory leadership that the Laboratory needed to do more to strengthen "the bridge" on these topics. It followed also from the call to action issued by then-Secretary of Energy Ernest Moniz: "We must challenge our thinking...in order to permit far-sighted actions that may reduce the chance for surprise and that buttress deterrence."¹

To encourage well-focused exploration of emerging issues, in 2015 we framed a new analytical approach for the Center, built around five thrust areas:

1. *Major Power Rivalry and Deterrence*
2. *Regional Challengers and Challenges*
3. *Toward Integrated Strategic Deterrence*
4. *The Future of Cooperative Measures to Reduce Nuclear/Strategic Dangers*
5. *The Future of Long-Term Competitive Strategies*

In each area, we then sketched out some high-level framing questions.

Then we went to work. Over the following five years, CGSR convened 45 two-day workshops and hosted 116 speakers. It issued 20 major publications and scores of research surveys and workshop summaries. It has built a student program and put more than 100 research associates at work on parts of the Center's agenda. It has kept stakeholders involved in defining and executing its program of work. It also expanded its mission to put a new focus on encouraging the development of emerging communities of interest.

¹ Memorandum from Ernest Moniz, Secretary of Energy, to Charles McMillan, William Goldstein, and Paul Hommert, directors respectively of Los Alamos, Lawrence Livermore, and Sandia National Laboratories, subject "Report on U.S. Nuclear Deterrence in Coming Decades," May 9, 2014.

This report summarizes key insights gained over this five-year period. It is comprehensive in approach, touching on all aspects of the CGSR agenda. But it is not exhaustive. After all, it would be impossible to capture in a single report the totality of that work. Instead, this report attempts to provide a coherent set of answers to the high-level framing question, as derived from that work. These should be thought of as initial hypotheses, subject to further inquiry and analysis. The report backs these up with a select discussion of aspects of our work bearing on those answers. The full record is available at the CGSR website.

In composing this summary, I must be clear that the views presented here are my personal views. They should not be attributed to anyone who participated in this work, unless they are directly cited, or to Lawrence Livermore National Laboratory or any of its sponsors.

As we have conducted our work, we have taken new motivation from the rising demand for new strategic thought coming from national leadership and following on the 2015 call to action of Secretary Moniz. In 2016, the National Defense Strategy lamented the “strategic atrophy” of recent decades and called for a high-level effort to “out-think, out-maneuver, out-partner, and out-innovate” adversaries. In 2017, the National Security Strategy argued that “the United States must develop new concepts and capabilities to protect our homeland...and preserve peace.” In 2020, the commander of U.S. Strategic Command called for an effort to “grow the intellectual capital to forge 21st century strategic deterrence.”

CGSR has sought to help restore strategic fluency, to out-think and out-partner, to develop new concepts, and to grow the needed intellectual capital. This is our interim progress report.



Brad Roberts with CGSR research associates William Heerdt, Casey Caruso, and Michael Gaines.

Major Power Rivalry and Deterrence

A lot has changed over five years. It is useful to recall our 2015 starting point. Russia had annexed Crimea but in Spring 2015 Secretary of Defense Carter had not yet called for “a new playbook for Russia” and President Putin had not yet called for “new rules or no rules.” China had recently become more militarily assertive in the maritime environment, engaging in various forms of risky behavior but President Xi had not yet expressed his fear of U.S.-led color revolutions or called for “an Asia for Asians.” The United States was heavily focused on turning the tide in the war against the Islamic Caliphate, tipping the balance against the Assad regime in Syria, and extracting itself from Iraq and Afghanistan. The Obama administration had lost hope in its efforts to build more constructive strategic military relationships with both Russia and China, as the strategic dialogues had come to dead ends. But it was six years into an effort to work with allies in both Europe and Northeast Asia to strengthen and adapt regional deterrence architectures for 21st century purposes. In the nuclear realm, the long-deferred need to decide between modernizing and retiring U.S. deterrent forces came to the fore and, along with it, a debate about what more could be done to reduce nuclear roles and numbers. For their part, U.S. allies were, with varying degrees of urgency, working with the United States to adapt and strengthen regional deterrence architectures very eager to contribute their views to U.S. debate, policymaking, and planning.

To guide our work on this first thrust area, we composed the following high-level framing questions:

- How do Russia and China think about and plan for possible conflict with the United States and its allies?
- How should the United States and its allies respond?
- What are the particular roles of U.S. and allied nuclear capabilities in meeting these challenges?
- What does assurance of U.S. allies require of the United States?

Our work has led us to the following answers. These should be seen as tentative or as working hypotheses, as they are all subject to further analysis and testing.

1. Although major power rivalry is seen by many U.S. leaders as a new factor in the security environment, for the leaders of Russia and China it has been an enduring factor. Already in the 1990s, they were highly motivated to prepare for possible conflict with the United States.

2. The leaders of Russia and China are resentful of U.S. power, fearful of U.S. ambitions, and revisionist in their orientation to the U.S.-backed regional security orders in which they sit and to the global order. They are pursuing zero-sum strategies to alter those orders to their benefit. Their success would spell the end of strategic autonomy for countries now allied with the United States. It would also resurrect old questions about the safety of the United States in a world in which Eurasia is dominated by hostile powers.
3. Three decades ago, Russia began a “fundamental reappraisal” of the nature of warfare that it fears might be brought to it by the United States and has set out extensive new military thought about modern warfare. Its military doctrine distinguishes three primary levels of war: local war, regional war, and major war involving questions of the sovereignty and integrity of the Russian state. In recent decades most of its military innovation has focused on the regional level of war.
4. Russia’s reappraisal has led it to a new approach to strategic deterrence that applies all of the tools of deterrence available to it across the entire spectrum of conflict, with the aim of being able to credibly threaten to inflict, at any level of escalation, a “prescribed dosage of damage” sufficient to persuade an enemy to de-escalate but not so large as to create new stake and resolve for the enemy.
5. In a war against NATO, Russia’s strategy appears to be aimed at bringing NATO to critical decision points where it faces a hard choice between escalation (and its costs and risks) and de-escalating (and compromising some interest at stake).
6. China’s approach to modern conflict is strikingly similar to Russia’s. This is hardly surprising as it too is faced with “the challenge of deterring and defeating a conventionally-superior nuclear-armed major power and its allies” (a phrase used by experts on both countries). But there are also some important differences between the two.
7. Western strategic thought about Russia’s military strategy has been captured by a debate about the precise place of nuclear weapons in Russian doctrine, thus distracting attention from the broader contours of Russian strategy and from its foundational concepts. That strategy has an internal logic that links ways and means. Think of this as a theory of victory. To negate that theory, we must first understand it. It encompasses a coherent set of ideas about how to deter and, if necessary, defeat the United States and its allies in regional wars on their periphery. These are wars that they can win only if they

succeed in keeping them limited. Thus, they focus on breaking the resolve of the U.S. and its allies to defend their interests at rising cost and risk in crisis, war, and peacetime. Think of this as a theory of victory in the spirit of Clausewitz, who defined victory as that “culminating point” in a conflict when one side chooses not to run the costs and risks of continued war.

8. Experts in Russia and China appear also to have developed theories of victory in the spirit of Sun Tzu. He defined victory as success in subduing an enemy without fighting (that is, to persuade him with a carefully constructed stratagem not to defend an important interest). The Gray Zone strategies of Russia and China align with the same strategic objectives that would guide them in war—to re-make regional and global orders.
9. Russia and China have done much more than just develop theories of victory for possible conflict with the United States. They have updated defense strategy, revised military doctrine, reorganized command structures to enable more effective integration, developed new operational concepts, aligned capability development with those concepts, fielded new capabilities, and exercised them. Their 30-year focus and investment has paid off in new military confidence.
10. Thus, the United States and its allies face a new strategic problem: regional conventional wars under the nuclear shadow against major powers. Such wars would have significant escalatory potential, and not just by nuclear means. Their potential to escalate trans-regionally and in the new domains would be central features.
11. In such conflicts, U.S. nuclear forces have unique but limited roles: to deter actions that jeopardize U.S. vital interests, or those of an ally, and to respond if necessary. The roles of the NATO sharing arrangements are to demonstrate collective resolve and the transatlantic link. A credible nuclear deterrent also negates attempts at nuclear coercion.
12. Between the end of the Cold War and the mid-2010s, the United States and its allies in Europe and Asia put their strategic focus on the emerging challenge posed by regional challengers (also known as rogue states) armed with weapons of mass destruction (WMD) and long-range delivery systems. They have been engaged in various continuing projects to adapt and strengthen deterrence for this purpose. Towards that end, they have taken a comprehensive approach to deterrence that must now be adapted and modified so that it can also be effective for the problem of potential major power conflict. Yet this approach has often fallen between the policy cracks,

as high-level attention focused on nonproliferation and regional experts focused on alliance management.

13. In facing the problem of WMD-armed regional challenges, the United States and its allies have put great stock in U.S. military supremacy at both the conventional and strategic levels of war. But it cannot expect to have such supremacy over Russia or China. This is in part because the conventional advantages of the United States have steadily eroded over the last three decades. This could be crippling. The United States must re-learn the disciplines of war in a contested environment.
14. The United States must also re-learn the art of extended deterrence. This is a natural consequence of Red theories of victory that put U.S. allies in their cross-hairs, nuclear and otherwise, and of the eroding U.S. conventional posture. For most of the post-Cold War period, extended deterrence has been an afterthought for U.S. defense planners. In contrast, for many U.S. allies in both Europe and East Asia, the last decade has been a period of rising anxiety about the U.S. nuclear guarantee. In recent years the volume of dialogue among the United States and its allies on such matters has grown.
15. The United States and its allies must also re-learn the theory of limited nuclear war and its relationship to deterrence strategy. In such conflicts, U.S. nuclear forces have unique but limited roles: to deter actions that jeopardize U.S. vital interests, or those of an ally, and to respond if necessary. The near taboo against this topic has reinforced the grip of outdated thinking on U.S. strategic thought. Russia's new approach to regional warfare involves a blend of old and new thinking about limited nuclear war. To be effective in negating Russia's theory of victory requires putting in place a reasonable counter.
16. The further adaptation of regional deterrence architectures to new purposes also requires coming to terms with a series of difficult questions about how to integrate capabilities into a coherent whole. This includes questions about conventional/nuclear integration, offense/defense integration, nuclear and cyber integration, as well as the integration of deterrence and competitive strategies. These are all topics where the weight of past practice is significant. Integration also brings with it difficult questions for the United States about how much it wants its allies to acquire the capabilities for autonomous escalatory action in crisis and war. Historically, the United States has resisted such autonomy, even as it has pressed for greater allied sharing of the defense burden.

17. Since approximately 2015, the United States has updated its national security strategy and national defense strategy to account for the new challenges of renewed major power rivalry. It has fully embraced strategic competition with China and the need to improve its competitive posture. But the United States has not so far developed a theory of victory for crisis and war with Russia and China. In the assessment of the National Defense Strategy Commission in 2018, the United States has not so far developed the needed new operational concepts and has done a poor job of understanding the requirements of deterring and, if necessary, winning a regional conventional war if an adversary escalates.
18. The further improvement of U.S. and allied strategies and capabilities for the new challenges of major power rivalry urgently requires a set of ideas about how best to connect ends, ways, and means. The United States and its allies should develop robust theories of victory of their own encompassing the challenges of deterring and, if necessary, winning regional conventional wars under the nuclear shadow. In short, a Blue theory of victory is needed. Indeed, it is dangerously overdue. A Blue theory of victory must strip away Red's confidence in its "escalation calculus" and dispel misperceptions about Blue's resolve to defend its interests under attack.
19. The assurance of U.S. allies flows from partnership with the United States in accomplishing the above tasks. Put differently, it requires a shared vision of the security environment and the challenges to deterrence within it, an agreed division of labor and responsibility for deterrence and defense, American constancy of purpose, and tangible displays of U.S. intention and capability to defend its allies even in a nuclear context.
20. Looking ahead a decade, there are major questions about whether the U.S. strategic posture will be fit for purpose. This is in part because the purpose may evolve. And it is in part because of challenges to the effort to modernize and adapt U.S. forces to a changed and changing security environment.
21. The landscape of major power rivalry and deterrence has shifted markedly in five years. In 2020, significant new questions have come into focus—for the United States and its allies and also for CGSR.

1

Although major power rivalry is seen by many U.S. leaders as a new factor in the security environment, for the leaders of Russia and China it has been an enduring factor. Already in the 1990s, they were highly motivated to prepare for possible conflict with the United States.

"If this [NATO expansion] happens, the need would arise for a fundamental reappraisal of all defense concepts on our side."

FSB head Y. Primakov, 1993

"The (forces of) Yugoslavia were always in the position of having to take a beating passively...whatever the enemy fears most, that is what we should develop."

Vice Chair of China's Central Military Commission, 1999

"Dangerously dysfunctional relations between Washington and Moscow have been blamed by the press, pundits, and even the presidential candidates on the failure of U.S. policymakers to properly 'read' Vladimir Putin and thus to predict the Kremlin's supposedly strategic foreign policy agenda. However, rather than attempting to predict Putin's next move or to de-code the meaning behind personnel shuffles at the Kremlin, policymakers and the analysts who support them would do better to pay more attention to Russia in a much broader sense. From the incompatibility of the 'European Project' with the worldview of the country's ruling elite, to the geopolitical reality Russia faces as a sprawling multi-ethnic state surrounded by dynamic rising powers, to worsening military tensions between Russia and NATO, there are deeper trends that are likely to shape Russian policy regardless of who is in the top job at the Kremlin."

Matthew Rojansky, CGSR lecture, "Russia's Foreign Policy Goals, European Security, and U.S. Strategy,"

October 18, 2016



"1999 was a turning point in U.S.-China relations. Because of the embassy bombing, China launched not just a nuclear, but a huge defense modernization program. Every new weapon we see today begins then."

Wu Riqiang, CGSR lecture, "Merits of Uncertainty: The Evolution and Future of China's Nuclear Retaliatory Capability,"

February 28, 2019



2

The leaders of Russia and China are resentful of U.S. power, fearful of U.S. ambitions, and revisionist in their orientation to the U.S.-backed regional security orders in which they sit and to the global order. They are pursuing zero-sum strategies to alter those orders to their benefit. Their success would spell the end of strategic autonomy for countries now allied with the United States. It would also resurrect old questions about the safety of the United States in a world in which Eurasia is dominated by hostile powers.

“Today we are witnessing an almost uncontained hyper use of force—military force—in international relations, force that is plunging the world into an abyss of permanent conflicts....the United States has overstepped its borders in nearly every way.”

President Putin, Munich Security Conference, 2007

“The policy of containment was not invented yesterday. It has been carried out against our country for many years, always, for decades if not centuries. In short, whenever someone thinks Russia has become too strong or independent, these tools are quickly put to use.”

**President Putin, 2014 annual address
to the Russian Federal Assembly**

“Our Western partners, led by the United States, prefer not to be guided by international law in their practical policies but by the rule of the gun....They have lied to us many times...The infamous policy of containment, led in the 18th, 19th, and 20th centuries, continues today. They are constantly trying to sweep us into a corner....If you compress the spring all the way to its limit, it will snap back hard.”

President Putin, remarks to the Duma, March 18, 2014

“New rules or no rules.”

President Putin's banner for 2014 Valdai Club speech

“It is for the people of Asia to run the affairs of Asia, solve the problems of Asia, and uphold the security of Asia.”

President Xi Jinping, New Asian Security Concept, 2014

“Russia and China note with alarm the extremely dangerous actions of individual states...to destroy the existing architecture....In the pursuit of strategic advantage in the military sphere, with the intention to ensure ‘absolute security,’ and in order to gain unlimited opportunities for military-political pressure on opponents of such states, mechanisms for stability are unceremoniously destroyed.”

Putin-Xi 2019 joint statement

“There is a growing belief in Russia and in its senior national security leadership that the United States seeks to change the nature of the Russian government. They also believe that the United States is seeking a first strike capability with respect to Russian forces.”

**Ambassador Linton Brooks, CGSR lecture,
“U.S.-Russia Relations in a Time of Confrontation,”**

July 2015



“Russian interest in influence on global issues gets to the heart of the aspiration and ambition of the Russian leadership under Putin not simply to function within Russia’s geopolitical space in Eurasia, but to play a role on the international stage. This influence on global issues enables Russia to be a rule maker, not just a rule taker....The central aspect of Russian threat assessment is the United States strategy to contain, constrain, encircle, coerce, and weaken the Russian regime and impose policies and outcomes on it. This is in complete contrast to Russian national security strategy of the 1990s when the main threats were seen as instability, terrorism, extremism, dislocation, economic decline—now we’re back to a sense that the main threat to Russian security is the United States.... The U.S. ability to conduct military operations at great distance using advanced capabilities and technologies and to sustain more than one operation at a time in the Eurasian heartland is why Russia views the United States as the main threat....The Putin elite views the primary threat to Russia as the threat to Putinism within Russia—the Putin political system of power that Putin constructed during the 2000s.”

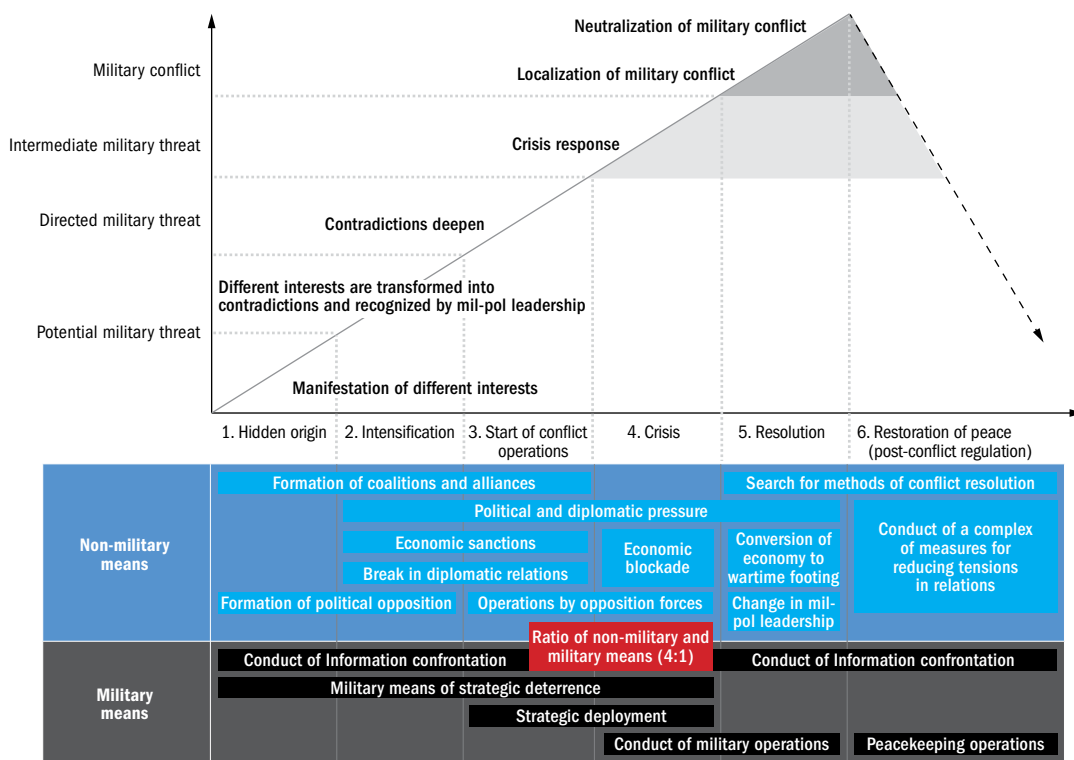
**Celeste Wallander, CGSR lecture,
“Russian Security Policy and the Implications for U.S. Defense Strategy,”**

May 2018



3 Three decades ago, Russia began a “fundamental reappraisal” of the nature of warfare that it fears might be brought to it by the United States and has set out extensive new military thought about modern warfare. Its military doctrine distinguishes three primary levels of war: local war, regional war, and major war involving questions of the sovereignty and integrity of the Russian state. In recent decades most of its military innovation has focused on the regional level of war.

BASIC PHASES (STAGES) OF CONFLICT DEVELOPMENT



Source: Dave Johnson, *Russia's Conventional Precision Strike Capabilities, Regional Crises, and Nuclear Thresholds* (2017) <https://cgshr.llnl.gov/>

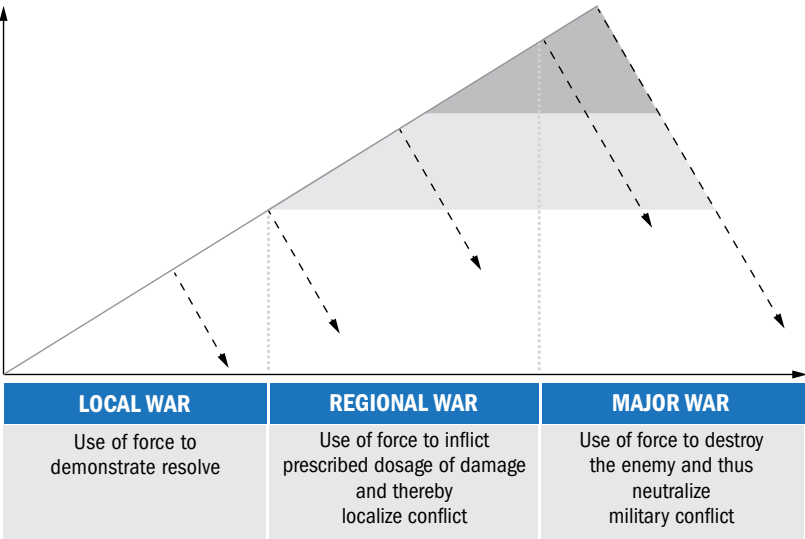
“War fighting in Russian military doctrine is rooted in the recognition in the 1990s that Russian conventional capabilities were unsuited for any kind of conflict. Moldova, Georgia, and Ukraine exposed weaknesses in Russian conventional force capability to move quickly, flexibly, and to prevail in a local, regional conventional conflict quickly before outside powers could intervene and take the initiative.”

**Celeste Wallander, CGSR lecture,
“Russian Security Policy and the Implications for U.S. Defense
Strategy,” May 2018**



RUSSIA'S NEW APPROACH TO REGIONAL WAR

- To deter and defeat, employ an expanded “strategic weapons set”...
- Through newly revised “strategic operations”...
- To inflict a “prescribed dosage” of damage ... to “sober, not enrage” the enemy
- In order to induce enemy political choices for de-escalation on Russian terms



Strategic Operations

1. Strategic Operation for the Deflection of Aerospace Attack
2. Strategic Aerospace Operation
3. Strategic Operation for the Destruction of Critically Important Targets
4. Strategic Nuclear Forces Operation
5. Strategic Operation in a Continental Theater of Military Operations
6. Strategic Operation in an Oceanic Theater of Military Operations

Source: Johnson, *Russia's Conventional Precision Strike Capabilities, Regional Crises, and Nuclear Thresholds*

“A further significant feature of the Russian way of thinking about conflict is that regional war is conceptualized as a war against a coalition of states. This means that any conflict between NATO and Russia is unlikely to be confined to geographic sub-regions such as the Baltic Sea region but will encompass a front from Norway to Turkey. In such a conflict, all capabilities will be at play to end the conflict on favorable terms. In the context of nuclear escalation, however, Russia delineates between regional war—that may include single or grouped use of non-strategic nuclear weapons—and large-scale war/global nuclear war that would also include the use of strategic systems.”

**CGSR workshop summary, “Winning Conventional Regional Wars Against Nuclear-Armed Adversaries,”
November 20-21, 2019**

"The Russians have demonstrated that nuclear weapons are not simply instruments supporting a defensive and peace preserving approach to deterrence in international politics. The Russians have shown that nuclear weapons can be used to support a strategy of aggression and belligerence and coercion."

**David Yost, CGSR lecture,
"Nuclear-Backed Little Green Men,"
June 28, 2015**



"How does Russia define its core military challenges today? First, Russian forces must be able to prevail in a local conventional conflict by creating a quick fait accompli and denying initial NATO efforts to overturn its position...Second, Russia must be able to deter or deny U.S and NATO efforts to use standoff conventional strikes to defeat Russia locally and mobilize for large scale intervention...Third, Russia must ensure strategic stability with the United States...Russia has been working on these challenges through a process of doctrinal and programmatic modernization that dates back to the turn of the century. The first two—regarding conventional conflict in Eurasia—actually have roots in the lessons learned from U.S. operations in Desert Storm, but received their strongest impetus from the assessments made of NATO's air war over Kosovo in the late 1990s."

**CGSR workshop summary,
"Putin's Russia And U.S. Defense Strategy,"
August 19-20, 2015**

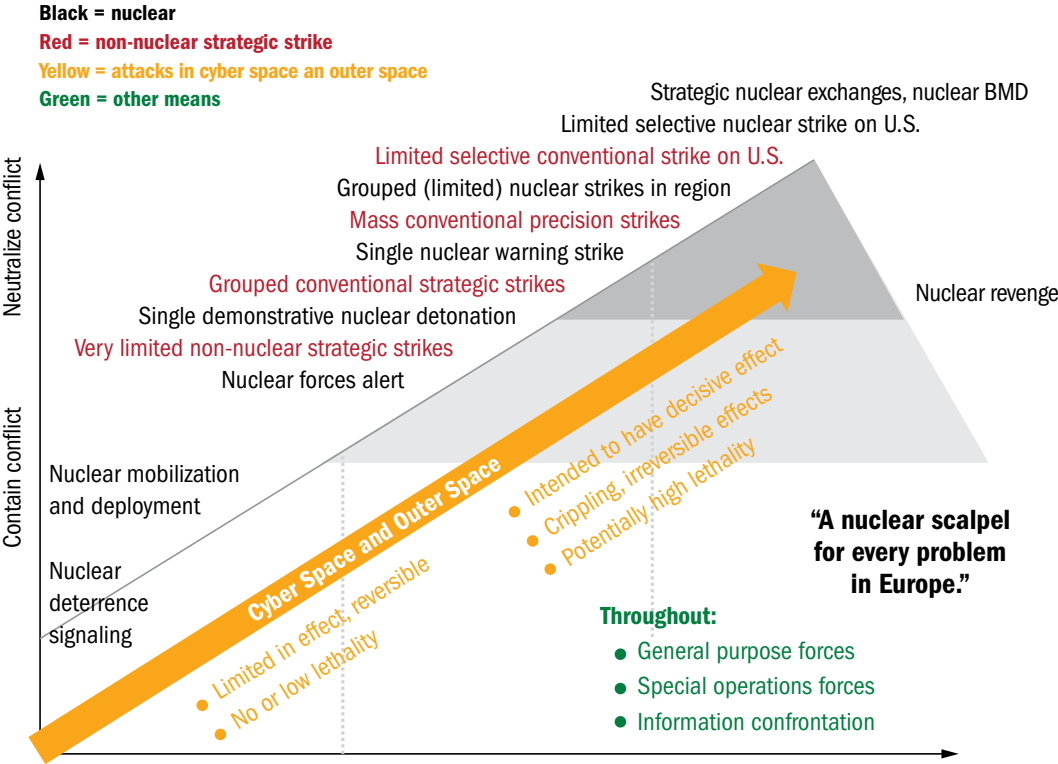
"To help achieve its geopolitical and security objectives, the Russian military has engaged in an ongoing comprehensive military reform with a goal of preparing its military for 21st century conflict. These reforms have come in two flavors: doctrinal reforms and reforms modernizing Russia's conventional and nuclear forces....Taken together with Russia's actions in Ukraine, Georgia, and Syria that utilized unconventional warfare, Russia's doctrinal and military transformations signal the development of a coercion strategy that seeks to influence the decision cycle of Russia's European neighbors to achieve Russia's foreign policy objectives, all while casting the nuclear shadow over any conventional conflict."

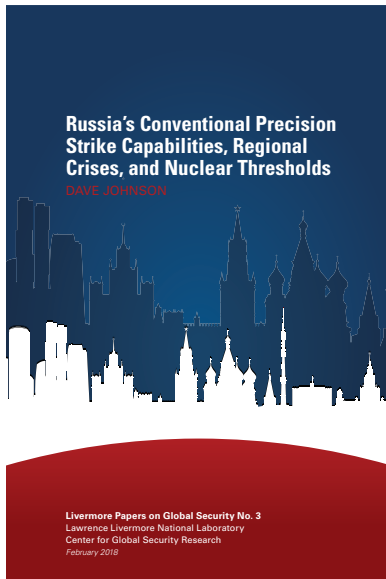
**CGSR workshop summary, "Strategic Weapons in the 21st Century,
Deterrence and Assurance in a Changed and Changing World,"
January 21, 2016**

4

Russia's reappraisal has led it to a new approach to strategic deterrence that applies all of the tools of deterrence available to it across the entire spectrum of conflict, with the aim of being able to credibly threaten to inflict, at any level of escalation, a "prescribed dosage of damage" sufficient to persuade an enemy to de-escalate but not so large as to create new stake and resolve for the enemy.

RUSSIA'S APPROACH TO STRATEGIC DETERRENCE





“Russia’s evolving approach to nuclear weapons as a geopolitical instrument in conjunction with conventional precision strike integrates their warfighting capability into Russia’s full-spectrum arsenal for psychological effect during conflicts short of war and for containment and escalation control during armed conflicts....”

“It would be wrong and extremely dangerous to assume that Russia’s nuclear threshold is ‘high.’ It would be equally wrong and dangerously constraining to assume that it is ‘low.’”

**Dave Johnson, Livermore Paper No. 3,
Russia’s Conventional Precision Strike
Capabilities, Regional Crises, and
Nuclear Thresholds, February 2018**

“Russian theorists debate the value of unacceptable versus irreparable damage, highlighting how assessing what constitutes unacceptable damage will be critical to determining what tools may be most useful in different kinds of scenarios. And in this context it is quite interesting to see mentioned the possible use of nonnuclear deterrence forces for de-escalatory purposes...These nonnuclear forces include more than cruise missiles. They include the entire range of nonnuclear capabilities at Russia’s disposal: both nonnuclear forces and nonmilitary tools.”

**Kristin Ven Bruusgaard, CGSR lecture,
“Russian Views on Strategic Deterrence,”
February 10, 2016**



“Just as Russia has a full spectrum approach to deterrence, it also has full spectrum approach to warfare. This means military force in a conflict is used in conjunction with political, diplomatic, economic, and other non-military means. Instruments, such as information confrontation and reflexive control are used to prepare the ground for success in a regional war before the conflict even begins.”

**CGSR workshop summary,
“Winning Conventional Regional Wars
Against Nuclear-Armed Adversaries,”
November 20-21, 2019**

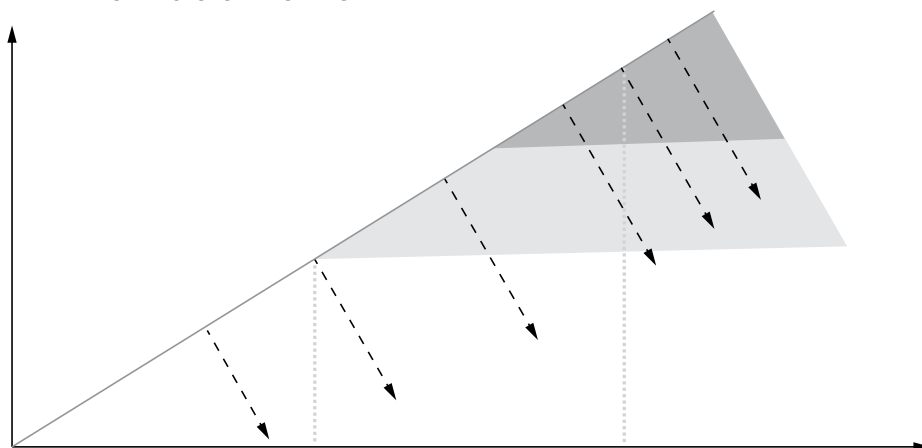
5

In a war against NATO, Russia's strategy appears to be aimed at bringing NATO to critical decision points where it faces a hard choice between escalation (and its costs and risks) and de-escalating (and compromising some interest at stake).

Those decision points include:

1. Whether to respond to an Article V challenge or to support a color revolution
2. Whether to sustain the commitment in the face of Russian actions to generate public fear and allied division or to de-escalate
3. Whether to sustain combat operations, escalate, or sue for peace in response to increasingly lethal Russian military operations
4. Whether to conduct non-nuclear and/or non-kinetic strike operations on targets in Russian territory
5. Whether to ready and display shared nuclear forces
6. Whether and how to respond to nuclear attack and potentially also nuclear retaliation
7. Whether to accept a return to the status quo ante if such a return is possible

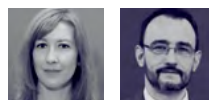
KEY NATO DECISION POINTS



“The Russian military does believe that intra-war deterrence—escalation management—is possible. This constitutes an intellectual departure from how the late Soviet Union thought about nuclear use and how the Russian military began thinking about nuclear use and what kind of escalation it would result in starting in the late 1990s.”

“Precision conventional capabilities will never replace non-strategic nuclear weapons in Russian thinking. 1) Russia does not ascribe to the idea of conventional-only war between nuclear powers; 2) the Russian military does not seek conventional capabilities to replace strategic nuclear weapons or non-strategic nuclear weapons and will retain a nuclear war fighting role for a theater nuclear arsenal always and forever; 3) nuclear weapons have psychological effects that are highly useful for escalation management that no amount of conventional weapons can rival; and 4) cost-wise nuclear weapons are the best competitive strategy.”

**Anya Fink and Michael Kofman, CGSR lecture,
“Russian Strategy for Escalation Management:
Evolution of Key Concepts,” June 2020**



Heather Kearny of STRATCOM and Michael Markey of CGSR at a workshop on deterring a nuclear-arming North Korea.

6

China's approach to modern conflict is strikingly similar to Russia's. This is hardly surprising as it too is faced with "the challenge of deterring and defeating a conventionally-superior nuclear-armed major power and its allies" (a phrase used by experts on both countries). But there are also some important differences between the two.

Similarities:

- A major re-thinking of military strategy and conflict dynamics beginning in 1993
- A central focus on regional conflict, primarily with the United States and its allies
- An "active defense strategy" that is defensive in intent but offensive in character
- A strategy aimed at negating the superior power potential of the United States and its allies
- Full integration of the kinetic, non-kinetic, nuclear, and non-nuclear means
- An emerging role for aerospace defense
- An assessment of asymmetry of stake lending credibility to escalatory threats

Differences:

- Much less prominent role of nuclear weapons (no tactical weapons)
- Strategic nuclear role: counter-attack when struck and re-attack as directed by political authorities until attack on China stops

"The Chinese government and the People's Liberation Army (PLA) view war as a science. They have been observing the American way of war since the 1990s and have studied this and other aspects of U.S. strategy diligently. The lessons learned are reflected in their broad defense modernization plans, their deep thinking about escalation control, and their four potential theories of victory."

**CGSR workshop summary, "Winning Conventional Regional Wars Against Nuclear-Armed Adversaries, 6th Annual Deterrence,"
November 20-21, 2019**

“China’s strategy for coercion and war is not unlike Russia’s. It encompasses a significant role for conventional forces and conventional deterrence to induce U.S. and allied restraint, while ‘changing facts on the ground’ in ways intended not to initiate war. It seeks to contain the risks of escalation by posing significant costs and risks to the United States and its allies, and encompasses a significant anti-access, area denial agenda. Relative to Russia, the nuclear component of its strategy and posture appears more modest, largely insulating the mainland from nuclear (or other strategic) attack.”

**CGSR workshop summary,
“Strategic Weapons in the 21st Century,” Washington DC,
January 26, 2017**

“China sees deterrence as flexible and sees value in both preventing war as well as preventing limited military conflicts from escalating into broader conflicts. By understanding deterrence as a continuum (unlike the U.S. linear approach), China sees value in intra-war deterrence in order to prevent local or low-level conflicts from escalating into a total war.”

**CGSR workshop summary,
“Emerging Challenges in the China-U.S. Strategic Military Relationship,”
March 28-29, 2017**

“China’s leadership assesses the balance to be shifting favorably but slowly. It is shifting favorably with the rise in China’s comprehensive national power, its growing economic clout regionally and globally, and its growing military capabilities. It is shifting favorably also in part because of perceptions of American weakness, paralysis, and retreat. It is shifting slowly because of continued domestic economic and political challenges and because of the difficulties of creating a military that is fully modern in more than name because it is capable of fully joint operations and managing the risks of escalation in multiple domains.”

**CGSR workshop summary, “Strengthening Deterrence for 21st Century
Strategic Conflicts and Competition: Accelerating Adaptation and
Integration,” November 14-15, 2017**

“China developed space, cyber, and conventional missile weapons to solve a common problem: giving Beijing the leverage it could not gain from its nuclear weapons in a future war over Taiwanese independence involving the United States.”

**Fiona Cunningham, CGSR lecture, “Maximizing Leverage: China’s
Strategic Force Posture Choices in the Information Age,”
May 30, 2019**



7

Western strategic thought about Russia's military strategy has been captured by a debate about the precise place of nuclear weapons in Russian doctrine, thus distracting attention from the broader contours of Russian strategy and from its foundational concepts. That strategy has an internal logic that links ways and means. Think of this as a theory of victory. To negate that theory, we must first understand it. It encompasses a coherent set of ideas about how to deter and, if necessary, defeat the United States and its allies in regional wars on their periphery. These are wars that they can win only if they succeed in keeping them limited. Thus, they focus on breaking the resolve of the U.S. and its allies to defend their interests at rising cost and risk in crisis, war, and peacetime. Think of this as a theory of victory in the spirit of Clausewitz, who defined victory as that "culminating point" in a conflict when one side chooses not to run the costs and risks of continued war.

Based on surveys of available writings of experts and officials in Russia and China, it is possible to sketch out a generic Red theory of victory. It begins with the following main premises:

1. The United States and its allies represent a potential existential threat if they are motivated and able to bring to bear all of their military strength to bear in a long war. But victory can be seized in a short war—and the gain held.
2. The escalatory risk of such a war can be managed by threatening and credibly demonstrating the ability in multiple domains to impose costs and risks on the United States and its allies beyond their willingness to bear. Coercion, blackmail, and brinkmanship can be made to work to Red's advantage in inducing Blue restraint.
3. Blue will come to see that Red's escalatory threats are credible because underlying asymmetries of stake, geography, and governance all favor Red.

It then has the following main hypotheses:

- If war with the United States appears inevitable, it is necessary and possible to create a *fait accompli*. The possibility of a meaningful military response by the United States and its allies to attempt to reverse the *fait accompli* can be significantly reduced by presenting an image of significant costs in blood and treasure.
- If the United States nonetheless resolves to try to restore the status quo ante militarily, this can be effectively halted by separating its allies from each other and from the United States.
 - This puts the United States in a difficult position of having to choose between fighting alone or not at all.

- If these efforts fail, U.S. military action can be made sufficiently costly to it by kinetic and non-kinetic attacks on any forces actively engaged in the attempted restoration, on the territories of those allies, and on U.S. forces in theater or en route to the theater (with anti-access, area denial strategies).
 - This puts the United States in a difficult position of having to choose between escalating and terminating without achieving its objectives.
- In certain extreme circumstances, the kinetic means might include non-strategic nuclear weapons.
- If these efforts fail to bring timely war termination and something significant is newly at risk, such as the bulk of the forces that created the fait accompli and/or the survival of the regime, then the United States can be reminded of the vulnerability of its homeland to attack.
 - This puts the United States and its allies in a difficult position of having to choose between further escalation after they have once failed to achieve their intended objective and terminating without achieving their objectives while under direct attack.
- Victory is possible without recourse to war. Confrontation can productively be pursued in the Gray Zone by combining information confrontation strategies with incremental insults to the U.S.-backed regional order. U.S. allies can be slowly robbed of their strategic autonomy and the United States can be paralyzed by division.

Think of this as a theory of victory in the spirit of Clausewitz. He defined victory as a “culminating point” in war when the enemy makes a political decision not to bear the continued costs and risks of war and accedes to the preferences of the victor in establishing the conditions of peace.

From the Foundations of State Policy of the Russian Federation in the Area of Nuclear Deterrence Presidential Decree No. 355, June 2, 2020:

- “Nuclear deterrence is intended to ensure that the potential adversary understands the inevitability of retaliation in the event of aggression against the Russian Federation and (or) its allies.”
- “Nuclear deterrence is ensured by the presence in the structure of the Armed Forces of the Russian Federation of combat-ready forces and means capable through the employment of nuclear weapons of guaranteed infliction of unacceptable damage on a potential adversary in any conditions of the environment, and also by the readiness and resolve of the Russian Federation to use such weapons.”
- “Nuclear deterrence is carried out continuously in peacetime, during the period of direct threat of aggression, and in wartime, up to when nuclear weapons begin to be used.”

- “The main military dangers, which, depending on the change in the military-political and strategic situation, can develop into military threats to Russian Federation (threats of aggression) for the neutralization of which nuclear deterrence is carried out, include:

- buildup by a potential adversary on territories neighboring the Russian Federation and its allies and adjacent waters of general purpose force groupings, which include means of nuclear delivery;
- deployment by states that consider the Russian Federation as a potential adversary of systems and means of missile defense, cruise and ballistic missiles of medium and short range, high-precision conventional and hypersonic weapons, unmanned combat aerial vehicles, and directed energy weapons;
- the creation and deployment in space of missile defense and strike systems;
- the possession among states of nuclear weapons and (or) other types of weapons of mass destruction that can be used against the Russian Federation and (or) its allies, as well as the means of delivery for these types of weapons;
- the uncontrolled proliferation of nuclear weapons, their means of delivery, technologies, and equipment for their production;
- the deployment of nuclear weapons and their means of delivery on the territories of non-nuclear states.”

“Russia’s challenge is global and multi-domain, not only regional...Russia’s challenge is also systemic and enduring. In particular, Putin is not an anomaly and the challenge will continue after he has left power. The challenge posed by Russia is volatile and nuclear, which has significant implications on strategic stability. Every Gray Zone clash has a potential to escalate. Challenges from Russia are also territorial and manifested by Russia’s actions in Crimea, Western Ukraine, Abkhazia, South Ossetia, and Transnistria. Regarding ideology, Russia now has more freedom of movement than during the Cold War as its propaganda does not have to be confined solely to influencing the left. Today, Russia can act both on the left and the right.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**

8

Experts in Russia and China appear also to have developed theories of victory in the spirit of Sun Tzu. He defined victory as success in subduing an enemy without fighting (that is, to persuade him with a carefully constructed stratagem not to defend an important interest). The Gray Zone strategies of Russia and China align with the same strategic objectives that would guide them in war—to re-make regional and global orders.

RUSSIA'S APPROACH TO GRAY ZONE CONFLICT

ENDS	WAYS	ILLUSTRATIVE MEANS
Destroy the existing European security order	<ul style="list-style-type: none"> • Reassert Russian influence and interests while pushing back Western and U.S. influence • Undermine the E.U. • Exploit and expand divisions within NATO • Undermine Western leaders, institutions, values 	<ul style="list-style-type: none"> • Create frozen conflicts around periphery • Active measures • Meddle in domestic politics • Repeatedly reinforce fabricated narratives in news cycle • Foster energy dependence
Weaken the U.S.-led international order	<ul style="list-style-type: none"> • Generate chaos for strategic effect • Undermine leaders, institutions, values • Reassert Russian influence wherever U.S. exercises influence 	<ul style="list-style-type: none"> • Pursue zero-sum foreign policy that challenges U.S. in all regions • Active measures
Set the conditions for success in a short war	<ul style="list-style-type: none"> • Set the expectation that U.S. actions will be contested • Set the expectation that U.S. actions will have nuclear consequences • Set the expectation that direct military conflict is possible 	<ul style="list-style-type: none"> • Displays of force and leadership statements • Reflexive control measures and other information confrontation measures to generate division, doubt, fear • Demonstrations of confidence in strategy, capabilities, and people

“The increased confidence of leaders in Moscow and Beijing in their capability to stand up militarily to the U.S. has led to their assertiveness in the Gray Zone. Here they compete not for relative power advantage but for the future regional order. They are also laying foundations for success in war, if it becomes necessary, by shaping the operational, political, ideological, and normative environments within which their enemies would choose courses of action....While the West is not indifferent to Gray Zone actions from Russia and China, it struggles to find an adequate response because it tends to focus on particular means and particular messages coming from Russia and China, but misses the overall strategy behind them.”

(continued next page)

“Although Russia’s ideas reflect a good deal of careful strategic thought, they also contain wishful thinking. Particularly dangerous is the notion that attacks can be used to ‘sober but not enrage’ the United States—or any democracy. Such attacks might well induce the desired restraint on one hand, but they might unleash a reply far beyond what the attacker contemplated on the other. In Russia, there does not seem to be a lot of concern about provoking escalation and the costs of miscalculation.”

**CGSR workshop summary,
“Winning Conventional Regional Wars Against Nuclear-Armed Adversaries,”
November 20-21, 2019**

CHINA’S APPROACH TO GRAY ZONE CONFLICT

ENDS	WAYS	ILLUSTRATIVE MEANS
Reestablish sovereignty	<ul style="list-style-type: none"> • Encroach out to 9-dash line • Secure favorable settlement of Taiwan issue • Deny U.S. efforts to gain Absolute Security 	<ul style="list-style-type: none"> • Claim outcroppings, build air bases • Employ maritime militias to contest control • Develop a "fully modern 21st century military"
Restore harmonious international order	<ul style="list-style-type: none"> • Regain "rightful place" as regional hegemon • Pursue "a continuous expansion of China's national interests" • Partner with Russia on Eurasian security, polycentric order • Entangle others 	<ul style="list-style-type: none"> • Increase comprehensive national power • Compete in S&T to gain competitive advantage • Implement Belt and Road initiative • In regional diplomacy, pursue bilateralism, not multilateralism
Prevent or forestall outbreak of war	<ul style="list-style-type: none"> • Safeguard national territorial sovereignty • Safeguard maritime rights and interests 	<ul style="list-style-type: none"> • Position and posture for military intimidation and deterrence
Set the conditions for success in war if it proves necessary or unavoidable	<ul style="list-style-type: none"> • Prepare to seize control by putting U.S./allies on defensive immediately and to control escalation • Demonstrate test resolve • Raise concerns in U.S.-allied countries about the cost and risks of war with China • Divide U.S. from its allies and reinforce doubts about the U.S. commitment and staying power 	<ul style="list-style-type: none"> • Prepare a "shock and awe" campaign • Operate occasionally with aggressive rules of engagement • Challenge THAAD deployments to RoK while pursuing BMD with Chinese characteristics • Implement the "3 warfares" (public opinion, psychological, legal) aimed at "compromising the capability of opponents to respond" in war and also in peacetime

Sun Tzu: "The supreme art of war is to subdue the enemy without fighting."

Science of Military Strategy: "Quasi war"—"on the continuum of conflict, a middle place in which militaries are involved but war has not broken out—characteristics of both war and peace."

“To destroy the security system, Russia targets its center of gravity, which is in the Euro-Atlantic space. Not only does it go after the network of U.S.-led alliances, but also transatlantic institutions which are repositories of prevailing values and rules. Russia’s ‘system warfare’ is about disrupting the system, not about occupying new and large geographical spaces.”

“There are a lot of common themes in North Korean, Russian, and Chinese theories of victory for achieving their strategic aims ‘short of war’ or through ‘short war’ and through separation of the United States from its allies. Yet, it appears that the extent to which they can learn from each other is limited due to divergent capabilities, specific goals, and priorities. However, if one of these states succeeds in undermining the U.S.-led alliance structure in one region, it will likely benefit adversaries in other regions. Simply put, they have immense stakes in each other’s success.”

CGSR workshop summary, “‘Compete, Deter, and Win’ in a Trans-Regional Perspective: On Meeting the New Challenges of Extended Deterrence,” February 26-27, 2019

“These principles of science and psychology have been weaponized...China made four acquisitions in the course of about six months to the point that they owned 92 percent of all theaters in America...they determine every movie made in this country...When was the last time you watched a movie with a Chinese villain? You haven’t, and you won’t...They figured out that stories matter. It is the heart and soul of propaganda.”

**Marshall M. Monroe, CGSR Lecture,
“Soft Power 2.0—China Style,”
January 24, 2019**




Masashi Murano of the Hudson Institute at the 6th Annual CGSR Deterrence conference.

9

Russia and China have done much more than just develop theories of victory for possible conflict with the United States. They have updated defense strategy, revised military doctrine, reorganized command structures to enable more effective integration, developed new operational concepts, aligned capability development with those concepts, and fielded new capabilities, and exercised them. Their 30-year focus and investment has paid off in new military confidence.

ALIGNING CAPABILITIES WITH THEORY

Shifts in Military Balance in Europe and Asia: 2000-2020



	RUSSIA	CHINA
General purpose forces	Ground forces superiority on its borders, substantial time-distance advantage	Expansion of naval forces and supporting military infrastructure in the East and South China Seas
Anti-Access/ Area-Denial	Increasing density of highly-capable air defense, anti-ship and EW capabilities	Increasingly capable anti-ship, air defense, and electronic warfare capabilities
	Significant and growing regional advantage in long-range precision strike	Growing regional advantage in long-range precision strike after sustained qualitative and quantitative improvements
Regional nuclear-strike	Modernization and expansion of number of non-strategic nuclear strike options	No tactical weapons but regional nuclear strike options being modernized
Cyber and counter-space	Significant and integrated	Significant and integrated as a part of Strategic Support Forces
Strategic nuclear forces	Modernization, diversification, preparations for possible expansion	Modernization, diversification, expansion

“China is also utilizing military tools to advance its goals. Like Russia, it understands U.S. vulnerabilities and is systematically striving to exploit these weaknesses. Defensive in its origins, military modernization creates a military force that can be used offensively to exert a regional control.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**

10

Thus, the United States and its allies face a new strategic problem: regional conventional wars under the nuclear shadow against major powers. Such wars would have significant escalatory potential, and not just by nuclear means. Their potential to escalate trans-regionally and in the new domains would be central features.

“While the United States and our closest allies fought two lengthy wars over the past 13 years, the rest of the world and our potential adversaries were seeing how we operated. They looked at our advantages. . .they looked for our weaknesses. And then they set about devising ways to counter our technological over-match.”

Deputy Secretary of Defense Bob Work, 2015

“The world revolution in military affairs (RMA) is proceeding to a new stage. Long-range, precise, smart, stealthy, and unmanned weapons are becoming increasingly sophisticated. Outer space and cyber space have become the new commanding heights in strategic competition among all parties. The form of war is accelerating its evolution to informatization.”

China’s Military Strategy, May 2015

“Although a large-scale war, including nuclear war, between major powers remains unlikely, they face increased risks of being drawn into regional conflicts and escalating crises.”

Russia Foreign Policy Concept, 2016

A “high likelihood. . .that any conflict that we have will be transregional, multi-domain, and multifunctional.”

Chairman of the Joint Chiefs of Staff Joseph Dunford, 2017

“It is very hard to conduct war against your banker. And the problem that we have is that if we are uncomfortable with what China is doing, we cannot attempt punish China without in the process punishing ourselves. We never had that problem with the Soviets.”

Ashley Tellis, CGSR lecture, “Balancing Without Containment: Dealing with China as an Emerging Threat,”

April 22, 2016

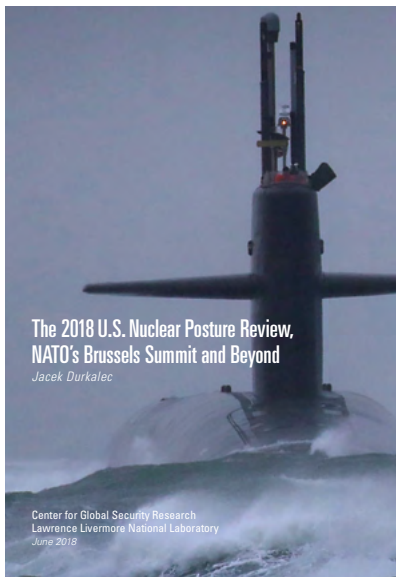


11

In such conflicts, U.S. nuclear forces have unique but limited roles: to deter actions that jeopardize U.S. vital interests, or those of an ally, and to respond if necessary. The roles of the NATO sharing arrangements are to demonstrate collective resolve and the transatlantic link. A credible nuclear deterrent also negates attempts at nuclear coercion.

“U.S. nuclear policy and strategy is subject to intense debate in Washington, DC especially in the U.S. Congress. In reality, there has been far more consensus than divergence about the basic fundamentals of U.S. nuclear strategy and the nuclear force posture needed to implement that strategy.”

**Robert Soofer, CGSR lecture,
“Nuclear Weapons: Theory, Strategy, and Politics,”
May 27, 2020**



“NATO’s aim should be to develop a comprehensive deterrence and defense strategy that would treat nuclear deterrence as an integral part of a multi-domain approach. One lesson of the Nuclear Posture Review is that the stove-piping of nuclear issues is unhelpful.... NATO should clarify the contribution of different nuclear capabilities to NATO’s overall ‘modern’ deterrence concept, and concrete steps that should be taken to ensure the political, military, operational, and institutional coherence between different elements of its posture. The arms control part of the strategy could be instrumental in taking steps to bolster

deterrence as a part of the proactive initiative aimed at strengthening NATO’s security through diplomatic means. The communication part of the strategy should design ways to most effectively present NATO nuclear policy to the public as an important element of an overall effort to strengthen NATO security.”

**Jacek Durkalec, CGSR Occasional Paper, The 2018
Nuclear Posture Review, NATO’s Brussels Summit and Beyond,
June 2018**

12

Between the end of the Cold War and the mid-2010s, the United States and its allies in Europe and Asia put their strategic focus on the emerging challenge posed by regional challengers (also known as rogue states) armed with weapons of mass destruction (WMD) and long-range delivery systems. They have been engaged in various continuing projects to adapt and strengthen deterrence for this purpose. Towards that end, they have taken a comprehensive approach to deterrence that must now be adapted and modified so that it can also be effective for the problem of potential major power conflict. Yet this approach has often fallen between the policy cracks, as high-level attention focused on nonproliferation and regional experts focused on alliance management.

A COMPREHENSIVE REGIONAL DETERRENCE ARCHITECTURE

Blue Tools Key Red Thresholds	Conventional forces	Missile defense	Cyber	Non-nuclear prompt strike	NATO's nuclear sharing arrangements	U.S./U.K./ France strategic nuclear forces
Attempt fait accompli	Deny quick win Create trip wire	Reduce expectation of decisive effect				
Expand conventional		Reduce benefit of limited strikes	Increase expected price of attack and make risks difficult to calibrate			
Expand cyber and space		Reduce confidence in sustained performance of A2/AD Seize and maintain some initiative				
Nuclear de-escalation strike		Deny confidence in "sober not enrage"			Display collective resolve	Retaliatory risk
Nuclear re-attack					Threat of limited retaliation	Significant risk threshold
Homeland attack						Uniquely credible threat

“There appears to be no Blue theory of victory. Attempts to create one—centered on the goal of prevailing in conventional war while preventing escalation to a higher level—led to a result which is incoherent and full of gaps. The Services, Combatant Commands, Joint Staff, and the defense analytic community seem to be more comfortable exploring the requirements of deterring than winning. There has been little consideration of what to do if a war goes nuclear, including of possible war-termination scenarios....To out-think potential adversaries, more competitive impulse is required. The U.S., with its allies, must develop the mentality of ‘winning and defeating.’ They need to become capable of thinking the unthinkable, including limited nuclear war. Persistence and resilience must be built into the military ethos: not only to fight the first day, but the next and the following in a continuously contested environment. Changing the mindset in this regard will not be easy.”

**CGSR workshop summary,
“Winning Conventional Regional Wars Against Nuclear Armed Adversaries,”
November 2019**

“Despite being successful in deconstructing bad solutions to problems posed by the Red theories of victory, the United States and allies were unsuccessful in constructing good solutions. Neither allied experts nor their American counterparts articulated a well-developed understanding of the Blue theory of victory.”

**CGSR workshop summary, “‘Compete, Deter, and Win’ in a Trans-Regional
Perspective: On Meeting the New Challenges of Extended Deterrence,”
February 26-27, 2019**

“While capabilities are necessary for deterrence and assurance, they are not sufficient. Nuclear and conventional capabilities must be coupled with strategic messaging, declaratory policy, the visible exercise of capabilities, and an overarching strategy to ensure credibility of U.S. deterrence and assurance architectures. These activities must be coordinated with our allies in East Asia and in NATO. These actions will broadcast both resolve to those who may seek to threaten or coerce the United States or its allies and the credible ability to employ the capabilities in the U.S. strategic stockpile.”

**CGSR workshop summary, “Strategic Weapons in the 21st Century:
Deterrence and Assurance in a Changed and Changing World,”
March 2016**

13

In facing the problem of WMD-armed regional challenges, the United States and its allies have put great stock in U.S. military supremacy at both the conventional and strategic levels of war. But it cannot expect to have such supremacy over Russia or China.

This is in part because the conventional advantages of the United States have steadily eroded over the last three decades. This could be crippling. It must re-learn the disciplines of war in a contested environment.

“America’s military superiority—the hard-power backbone of its global influence and national security—has eroded to a dangerous degree. Rivals and adversaries are challenging the United States on many fronts and in many domains. America’s ability to defend its allies, its partners, and its own vital interests is increasingly in doubt. If the nation does not act promptly to remedy these circumstances, the consequences will be grave and lasting.”

National Defense Strategy Commission, 2018

“The U.S. military could suffer unacceptably high casualties and loss of major capital assets in its next conflict. It might struggle to win, or perhaps lose, a war against China or Russia. The United States is particularly at risk of being overwhelmed should its military be forced to fight on two or more fronts simultaneously. Additionally, it would be unwise and irresponsible not to expect adversaries to attempt debilitating kinetic, cyber, or other types of attacks against Americans at home while they seek to defeat our military abroad. U.S. military superiority is no longer assured and the implications for American interests and American security are severe.”

National Defense Strategy Commission, 2018

“The move from a two-war to a one-war force planning construct magnifies the challenges of deterrence for the United States and its allies. A region could be vulnerable to aggression or intimidation if U.S. forces are fully committed to war in another. This puts a new burden on the ability to extend deterrence into regions and to rapidly bolster the deterrence posture in crisis scenarios. It also increases the value of allied contributions to regional deterrence architectures (and U.S. dependence on them).”

“As per the judgment of the Commission, the United States remains dangerously unprepared for a regional war with great powers such as Russia and China and could lose such a war if it were fought today. This is the logical consequence, the Commission argues, of deteriorating regional conventional balances and a lack of thinking about ‘what deterrence means in practice, how escalation dynamics

might play out...and how to defeat major-power adversaries should deterrence fail.' The Commission thus highlighted a number of 'key unmet operational challenges'—among them deterring and defeating the use of nuclear or other strategic weapons in ways that fall short of justifying a large-scale nuclear response."

"Put differently, there appears to be no Blue theory of victory. Attempts to create one—centered on the goal of prevailing in conventional war while preventing escalation to a higher level—led to a result which is incoherent and full of gaps...There has been little consideration of what to do if a war goes nuclear, including of possible war-termination scenarios."

**CGSR workshop summary,
"Winning Conventional Regional Wars Against Nuclear-Armed Adversaries,"
November 20-21, 2019**



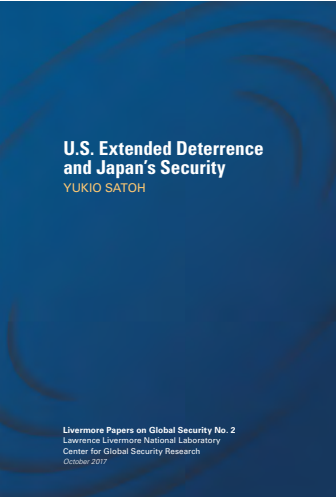
Michael Ruhle and Linton Brooks at a workshop on strategic stability.

14

The United States must also re-learn the art of extended deterrence. This is a natural consequence of Red theories of victory that put U.S. allies in their cross-hairs, nuclear and otherwise, and of the eroding U.S. conventional posture. For most of the post-Cold War period, extended deterrence has been an afterthought for U.S. defense planners. In contrast, for many U.S. allies in both Europe and East Asia, the last decade has been a period of rising anxiety about the U.S. nuclear guarantee. In recent years the volume of dialogue among the United States and its allies on such matters has grown. The assurance of U.S. allies requires a shared vision, an agreed division of labor and responsibility, American constancy of purpose, and tangible displays of U.S. intention and capability to defend its allies even in a nuclear context.

In Northeast Asia, extended deterrence must come to terms with the twin challenges of a nuclearizing and revisionist North Korea as well as an increasingly powerful and assertive China that is also revisionist. It must also account for the assurance requirements of Japan and the Republic of Korea (RoK). Both require visible and tangible displays of the intention and capability of the United States to extend deterrence on their behalf in time of crisis and war. They also require the assurance that they will be part of the decision process when and if a U.S. president is ever facing a decision about whether or not to employ nuclear weapons in their defense. For both, deterrence is increasingly an alliance task and objective, requiring combined and mutually-reinforcing capabilities and activities between allies and sometimes also joint, cross-alliance operations.

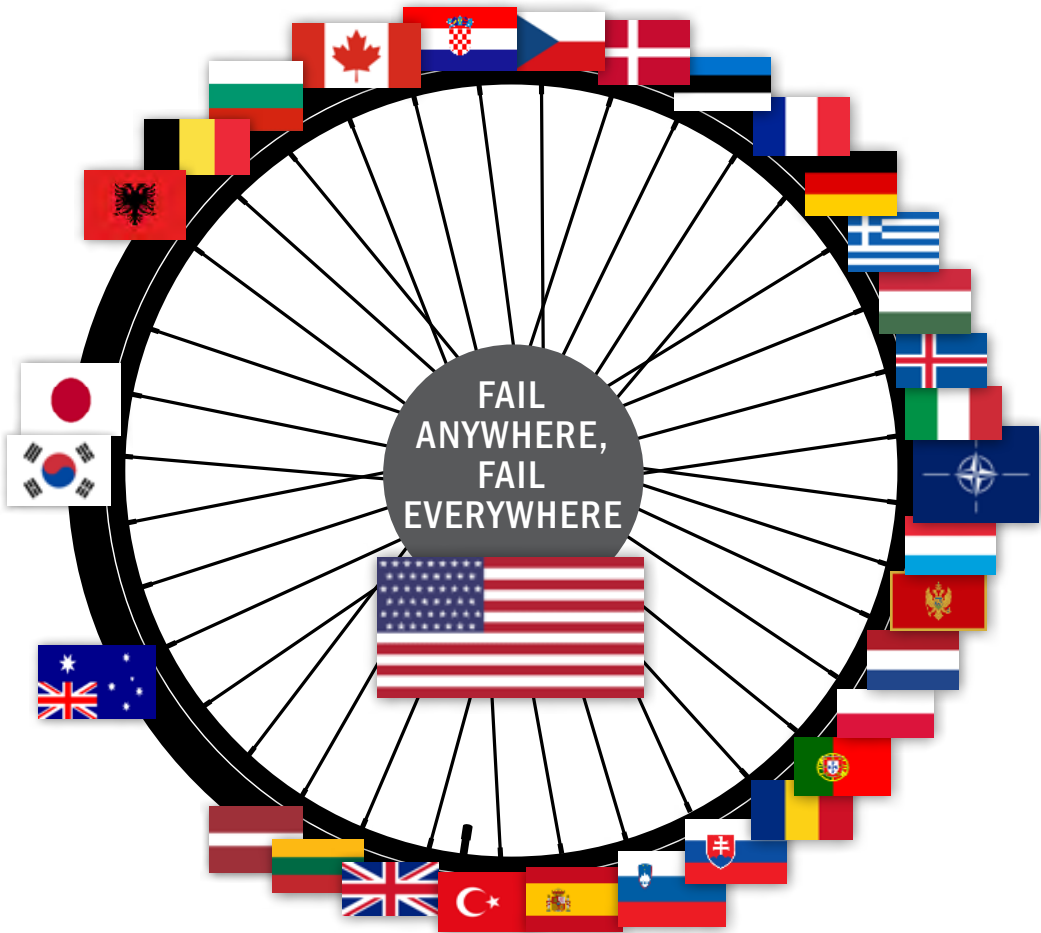
In Europe, extended deterrence must come to terms with an even more complex security environment than in Northeast Asia, given the differences in threat perception of alliance members and rising anxiety about whether an attack on one will be treated as an attack on all, as the North Atlantic Treaty promises. Moreover, the alliance is under various new forms of pressure, both external and internal. The process of “adapting and strengthening” NATO’s deterrence posture set in motion by the 2016 Warsaw Summit appears to have lost momentum, generating growing concern among those allies feeling most vulnerable to Russian coercion and possible attack. The Trump administration’s Nuclear Posture Review found weaknesses of extended deterrence in Europe, supported legacy NATO nuclear policy and posture, but also concluded that the United States should supplement its national forces with an additional low-yield option to underwrite extended deterrence in Europe.



“To adapt the concept of deterrence to such a country as North Korea, it is essential for the United States and its allies to stay on course to deepen alliance cooperation to further enhance the effectiveness of the alliances’ deterrent and the credibility of U.S. extended deterrence, particularly in the eyes of the South Koreans and the Japanese. Japan’s primary contribution to this end will be to quickly equip itself with the capabilities needed to fully implement its roles as spelled out in the 2015 Guidelines for Japan–U.S. Defense Cooperation and further expand its contributions to the deterrence of the Japan–U.S. alliance.”

**Yukio Satoh, Livermore Paper No. 2,
U.S. Extended Deterrence and Japan’s Security,
October 2017**

AN URGENT NEED TO RE-LEARN EXTENDED DETERRENCE



“Due to the nature of the Cold War as a bipolar competition, U.S. security guarantees to allies were often implied, even if they were not explicitly outlined. After the Cold War, this became less certain, and allies now seek explicit statements of U.S. commitment, both through and outside of formal defense treaties.”

**Andrew O’Neil, CGSR lecture,
“Extended Deterrence and the Australia-U.S. Alliance:
Beyond Abstract Reassurance,” July 13, 2015**

“In exploring extended deterrence in a changing security environment, the trans-regional perspective offers useful insights...But the applicability of the trans-regional perspective is limited by the salient differences between alliance structures (multilateral in Europe, bilateral in Asia), by geography (continental in Europe, maritime in Asia), and by the very different strategies of Russia and China in the Gray Zone (with Russia focused on de-constructing the order around it and China focused on ‘salami-slicing’ its way through its list of territorial claims).”

“While there is a need for improvement in extended deterrence software and hardware in Europe and the Asia-Pacific, the needs between the two regions require different approaches. While the framework for NATO’s future nuclear adaptation is fairly straightforward, it remains unclear whether NATO allies will manage to implement what they agreed upon in a timely manner due to political sensitivities and domestic tensions. The direction of further nuclear adaptation in the Asia-Pacific is undetermined since there seem to be divergent views between the United States and allies on how to move forward.”

**CGSR workshop summary,
“‘Compete, Deter, and Win’ in a Trans-Regional Perspective: On Meeting
the New Challenges of Extended Deterrence,”
February 26-27, 2019**

“When it comes to political warfare, it is inherently ambiguous and shrouded in deception as adversaries are utilizing overt and covert disinformation campaigns and cyber tools to deter, compel, or disorient the United States and its allies. The United States cannot ignore the fact that allies’ perceptions of resolve and will are being shaped today within the political warfare realm. If the United States fails to hold its own in this arena, then assuring its allies will prove to be increasingly difficult.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**

“Global factors inform local perceptions of U.S. credibility. U.S. behavior anywhere can impact confidence in the U.S. commitment to any ally, however distant it may be. On the other hand, global factors are not decisive. The direct interactions between the United States and its allies matter the most.”

“Despite a long discussion about the strengths and weaknesses of the current U.S. nuclear posture, there seems to be a recognition that any revolutionary hardware changes are not realistic. The center of gravity of adaptation of U.S. extended nuclear deterrence [lies] not in hardware, but in improved deterrence software enabling to take a full advantage of capabilities which are available. Also, while any hardware changes in nuclear capabilities depends on the decision of the United States, U.S. allies have a much more substantial role in updating the software.”

“In Europe and the Asia-Pacific, there is a significant room for updating extended deterrence software. The agenda includes updating overarching strategies; strengthening consultation, planning, and decision-making processes; enhancing capability planning; tailoring messaging, including declaratory policies; and re-focusing exercises.”

“Discussion also revealed rising European concern about whether the United States has the military and accessible financial means to meet the requirements of simultaneous and increasing challenges to U.S. extended deterrence in Europe and in the Asia-Pacific. Many European experts share the concerns expressed by the U.S. National Defense Strategy Commission about the apparent inability of the United States to support a ‘two regional wars’ strategy... The discussion also reflected a growing consensus that credibility of U.S. security guarantees in Europe will be increasingly dependent on the European investments in their own capabilities. The United States is and will be crucial for securing a favorable balance of power in Europe but maintaining such balance without European contributions is not possible.”

CGSR workshop summary,

“U.S. Extended Deterrence in Europe and in the Asia-Pacific: Similarities, Differences, and Interdependencies,”

November 13, 2017

“From a Japanese perspective, the central question is how to re-establish the regional deterrence architecture in light of the damage done to it by North Korea. Pyongyang now expects the United States and its allies to be deterred. Will they be? In this new circumstance, it is important that Washington and Tokyo take every opportunity to showcase their cooperation for deterrence, including with exercises that demonstrate the viability of flexible deterrent options.”

“From a South Korean perspective, bilateral progress to date in strengthening cooperation for deterrence has been significant but inadequate. Some important differences remain between Seoul and Washington over the requirements of deterrence, over the likelihood of new forms of military provocations by the North, and over escalation management strategies. The consultative mechanisms are functioning well but have their limits. Improved integration would be useful. One useful step would be improved trilateral cooperation in the U.S.-RoK-Japan relationship. Another step would be improved U.S.-RoK interoperability.”

“The United States and its allies should continue to pursue the comprehensive approach to adapting and strengthening regional deterrence architectures, as this shares the burden equitably and produces synergistic benefits. But they also need to put a clearer focus on the development of long-term strategies and concept development, as the effort here has been too modest.”

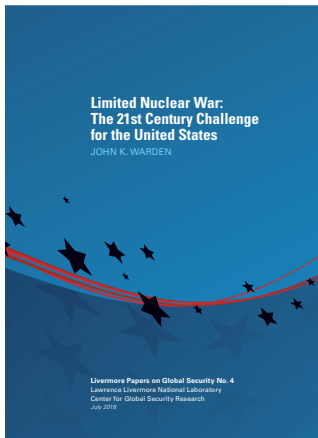
**CGSR workshop summary,
“Strengthening Deterrence for 21st Century Strategic Conflicts and
Competition: Accelerating Adaptation and Integration,”
November 14-15, 2017**



Kestutis Paulauskus and Seukhoon Paul Choi at a workshop on extended deterrence.

15

The United States and its allies must also re-learn the theory of limited nuclear war and its relationship to deterrence strategy. In such conflicts, U.S. nuclear forces have unique but limited roles: to deter actions that jeopardize U.S. vital interests, or those of an ally, and to respond if necessary. The near taboo against this topic has reinforced the grip of outdated thinking on U.S. strategic thought. Russia's new approach to regional warfare involves a blend of old and new thinking about limited nuclear war. To be effective in negating Russia's theory of victory requires putting in place a reasonable counter.



“If limited nuclear war is never to be fought, then the United States and its allies must prevent their adversaries from thinking it can be won. There is no universal blueprint for deterring nuclear use, but there are principles that can be profitably adapted to narrow circumstances.”

“The concepts presented here are a starting point, to be rounded out by deep analysis of specific adversaries and scenarios, vigorous efforts to develop strategies and acquire needed capabilities, and continuous evaluation of the adequacy of the U.S. deterrence posture toward each potential adversary.”

**John Warden, Livermore Paper No. 4,
Limited Nuclear War: The 21st Century Challenge
for the United States, July 2018**

“Escalation dominance is...more a psychological aspiration than a feasible objective. The more realistic aim is escalation advantage, which can be defined as real or perceived advantage held by one side of increasing the intensity or scope of the conflict. It does not necessarily require dominance at all levels of intensity or scope. In the nuclear domain, it is an ability to shift the balance of nuclear forces in a way that provides a real or perceived advantage in a competition of risk-taking, casting a long shadow over the entire spectrum of conflict. Escalation advantage can be pursued to enhance deterrence....It could also be used as a part of a competitive strategy aimed at forcing an adversary to divert and overstretch its resources by investing in countermeasures.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**

16

The further adaptation of regional deterrence architectures to new purposes also requires coming to terms with a series of difficult questions about how to integrate capabilities into a coherent whole. This includes questions about conventional/nuclear integration, offense/defense integration, nuclear and cyber integration, as well as the integration of deterrence and competitive strategies. These are all topics where the weight of past practice is significant. Integration also brings with it difficult questions for the United States about how much it wants its allies to acquire the capabilities for autonomous escalatory action in crisis and war. Historically, the United States has resisted such autonomy, even as it has pressed for greater allied sharing of the defense burden.

ALLIED CONTRIBUTIONS TO ALL-DOMAIN REGIONAL DETERRENCE ARCHITECTURES

Contributor	Conventional forces	Regional BMD	Non-nuclear strike	Cyber	Space and counter space	Nuclear	Deterrence software
NATO	Rapid Reaction Force & 2%	Territorial Missile Defense re Mideast threats, IAMD against all threats	Fighter aircraft	New NATO mission	New strategy	Sharing	Summit communiques
U.K./ France	NATO roles	-	Aircraft, cruise missiles	improving resilience	National assets	"ultimate guarantee"	Leadership statements
Japan	Host nation support	Robust in place, joint development	In debate	improving resilience	Limited monitoring	Host Dual Capable Aircraft (DCA) in crisis	Defense Planning Guidelines
RoK	Combined forces	Patriot and THAAD	Missiles in deployment and development	improving resilience	-	Host DCA in crisis	Deterrence strategy
Australia	Limited maritime projection	Future limited sea-based	-	improving resilience	Space Situational Awareness	-	-
U.S. Unique	Power projection, solution to 2-war problem	Both protection of power projection and Homeland defense	Air breathing only, no prompt non-nuclear	improving resilience and offense	Space defense plus space control	Strategic and non-strategic forces	POTUS statements

“Stable mutual deterrence required opposing nuclear powers to have credible, survivable nuclear forces. Technological advances and geopolitical developments, however, have broadened the scope of the deterrence discourse with more of an emphasis on regional stability, conventional deterrence, and multi-domain warfare.”

**CGSR workshop summary,
“Assessing the Strategic Effects of Artificial Intelligence,”
September 2018**

“There are divergent views whether NATO is at the start or at the end of the adaptation process. While some think that the Alliance has reached its limits, others think the measures taken so far are only the beginning. There also is no agreement about the relationship between deterrence and defense. Some member states think that the two should be separated and that deterrence does not require ‘a readiness to fight tonight.’ For others, such readiness is essential to make deterrence credible. Coherence between conventional and nuclear deterrence is an additional challenge. NATO allies also disagree about the need for further deterrence adaptation. For some, NATO deterrence is strong; for others, it is ‘deterrence by reputation,’ which has not undergone a realistic stress test.”

**CGSR workshop summary,
“U.S. Extended Deterrence in Europe and in the Asia-Pacific: Similarities,
Differences, and Interdependencies,”
November 13, 2017**



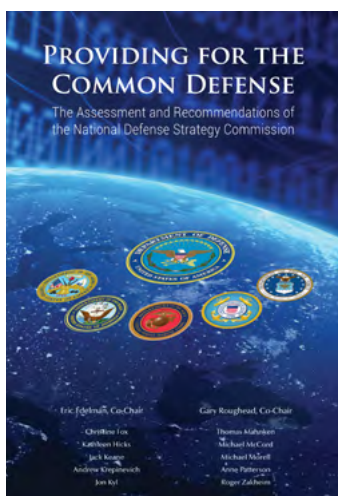
Project on Nuclear Issues (PONI) workshop with Rebecca Hersman and Christopher Ford.

17

Since approximately 2015, the United States has updated its national security strategy and national defense strategy to account for the new challenges of renewed major power rivalry. It has fully embraced strategic competition with China and the need to improve its competitive posture. But the United States has not so far developed a theory of victory for crisis and war with Russia and China. In the assessment of the National Defense Strategy (NDS) Commission in 2018, the United States has not so far developed the needed new operational concepts and has done a poor job of understanding the requirements of deterring and, if necessary, winning a regional conventional war if an adversary escalates.

To cite from the NDS Commission 2018 Report:

- “The United States has been responding—inadequately—to operational challenges posed by our competitors. We must reverse that paradigm and present competitors with challenges of our own making.”
- Among the “core unmet operational challenges”: “deterring and if necessary defeating the use of nuclear or other strategic weapons in ways that would fall short of justifying a large-scale nuclear response”
- “There was little consensus among DoD leaders...on what deterrence means in practice, how escalation dynamics might play out, and what it will cost to deter effectively.”
- “DoD leaders had difficulty articulating how the U.S. military would defeat major-power adversaries should deterrence fail.”
- “Put bluntly, the U.S. military could lose.”



18

The further improvement of U.S. and allied strategies and capabilities for the new challenges of major power rivalry urgently requires a set of ideas about how best to connect ends, ways, and means. In short, a Blue theory of victory is needed. Indeed, it is dangerously overdue.

A Blue theory of victory must address the requirements of regional conventional war against nuclear-armed adversaries and their strategies of blackmail, brinkmanship, and coercion. As former Chairman of the Joint Chiefs Joseph Dunford argued, such wars could have multi-domain, multi-dimensional, and potentially trans-regional aspects. The two “sides” in such a war would likely be complex, with one encompassing the complex relations between the United States and its allies and the other involving some mutually supportive strategic gestures between Russia and China (as their strategic partnership puts them in position to cooperate to stress the U.S. one-war capacity).

The objective of a Blue theory of victory must be to strip away the enemy’s confidence in his ability to rapidly achieve decisive effects, to bear expected costs, and to calculate risks, nuclear and otherwise. Toward this end, Blue should map out key Red decision points in a war against Green/Blue and take steps to reduce Red’s expected benefits and increase Red’s expected costs.

ALIGNING CAPABILITIES WITH THEORY

REGIONAL DETERRENCE ARCHITECTURE	POTENTIAL IMPACT ON RED ESCALATION CALCULUS
A solid political foundation of unity of purpose within the alliances	Reduces Red expectations of a successful challenge to an alliance interest
A favorable balance of conventional forces	Reduces Red expectations of a successful fait accompli
Resilience & strike in cyber and space	Reduces Red expectations of invisible Blue capitulation, increases Red’s expected costs
Improved conventional strike capabilities	Increases Red’s expected costs and accelerates expected loss of initiative
A tailored regional missile defense posture	Reduces Red expectation of blackmail success by taking Red “cheap shots” off table
A “tailored regional nuclear component”	Sharing arrangement signal collective resolve, allied resolve transatlantic link
A homeland missile defense component	Reduces Red coercive benefits of threats and limited attacks aimed at de-coupling U.S. from allies
The U.S. strategic nuclear force	Ensures Red expectation of retaliation for attacks on vital interests of U.S. and/or its allies

A Blue theory of victory can be built on the following central premises:

- At the conventional level of war, the United States and its allies (Green) can deny Red’s attempted fait accompli even in a contested environment. With sufficient preparation, it can blunt the effort to attain a decisive result

quickly, surge despite harassment, and then engage in combat for decisive effects on Red, while also protecting Green. Those effects can be won with:

- a superior understanding of the limited, perhaps fleeting opportunities in that contested environment
- a superior ability to seize those opportunities with effective execution.
- Red's threats to escalate can be rendered moot by demonstrations of political cohesion and risk acceptance by the U.S. and its allies and by credible displays of the ability to integrate multi-domain operations for transregional effects.
- If Red crosses the nuclear threshold in theater, in a limited way, a proportionate U.S. retaliatory strike would awaken it to its miscalculation of U.S. and allied resolve.
- If Red crosses the transregional threshold and conducts lethal but non-nuclear attacks on the U.S., countering U.S. escalation would awaken it to its miscalculation.
- Broader nuclear/strategic war is strongly disincentivized by the ability of the U.S. to utilize its strategic forces even if under attack.
- Blue and Green can negate Red's efforts to use nuclear threats to coerce in the Gray Zone by negating Red confidence in its strategy for escalation in crisis and war.

**On Theories of Victory,
Red and Blue**

BRAD ROBERTS

Livermore Papers on Global Security No. 7
Lawrence Livermore National Laboratory
Center for Global Security Research
June 2020

“Why do we need a theory of victory? It is a necessary condition for strategic competence and strategic success. Without such a theory, the United States and its allies, though armed with many powerful tools, military and otherwise, have no coherent set of ideas about how to marshal them to achieve policy objectives. In case of war, we ‘could lose,’ in the words of the NDS. Or we could win—but in a manner that only sows the seeds of resentment and further conflict.”

“Without such a theory, leaders in Moscow and Beijing could be emboldened to precipitate crises and leaders in allied countries could choose independence

and proliferation rather than continued reliance on the United States. Moreover, we face a complex set of challenges in a multipolar security environment marked by multi-domain strategic competition. Without a simplifying concept that can mobilize action of many kinds in a holistic manner, we have good reason to doubt our efficiency in innovating.”

**Brad Roberts, Livermore Paper No. 7,
On Theories of Victory, Red and Blue,
June 2020**

19

The assurance of U.S. allies flows from partnership with the United States in accomplishing the above tasks. Put differently, it requires a shared vision of the security environment and the challenges to deterrence within it, an agreed division of labor and responsibility for deterrence and defense, American constancy of purpose, and tangible displays of U.S. intention and capability to defend its allies even in a nuclear context.

At CGSR, we have ensured diverse allied participation in our workshops. Over the past five years, we have had approximately 300 participants from countries allied with the United States. From our interactions, we draw the following high-level observations:

- Among those allies concerned about threats to their sovereignty and integrity, anxiety about the security guarantor role of the United States is high and rising. The reasons are numerous. Those subject to direct nuclear threats are especially anxious.
- Experts in Europe and Asia watch closely experience in the other region to help set their own expectations about the reliability of the United States as a guarantor and the credibility of U.S. extended deterrence. This cross-regional aspect often goes unnoticed by U.S. experts.
- The United States and its allies are closing the gap in understanding adversary strategies. But much more needs to be done to understand the characteristics of potential regional conflicts that will be multi-domain, multi-dimensional, and perhaps also trans-regional.
- The analytic community is more comfortable exploring the requirements of deterring than winning. There has been little “thinking about the unthinkable” and considering what to do if a war goes nuclear.
- Engaging allies in deterrence discussion remains crucial. Otherwise, their views are only an afterthought in the U.S.-centric discussion.

“During the Cold War, a grand strategy focused on allied defense, deterrence, and assurance helped to keep the peace at far lower material and political costs than its critics allege. When the Soviet Union collapsed, however, the United States lost the adversary the system was designed to combat. Its alliances remained without a core strategic logic, leaving them newly vulnerable. Today the alliance system is threatened from without and within. China and Russia seek to break the United States’ alliances through conflict and nonmilitary erosion. Meanwhile, U.S. politicians and voters are increasingly skeptical of alliances’ costs and benefits and believe the United States may be better off without them. But what if the alliance system is a victim of its own quiet success? U.S. national security requires alliances that deter and defend against military and nonmilitary conflict alike. The alliance system is past due for a post–Cold War overhaul, but it remains critical to the country’s safety and prosperity in the twenty-first century.”

**Mira Rapp-Hooper, CGSR lecture, “Shield of the Republic:
The Triumph and Perils of America’s Alliances,”**

July 13, 2020



Former Laboratory Director Michael May and CGSR fellow Jacek Durkalec at the 6th Annual CGSR Deterrence conference.

20

Looking ahead a decade, there are major questions about whether the U.S. strategic posture will be fit for purpose. This is in part because the purpose may evolve. And it is in part because of challenges to the effort to modernize and adapt U.S. forces to a changed and changing security environment.

“To judge whether the [U.S. nuclear] posture [of 2030] will be fit for purpose requires having an understanding of the intended purpose. Today, the U.S. nuclear posture serves various purposes: deterrence in a multipolar context, strategic stability, extended deterrence, assurance, and hedging. It also serves as a form of insurance against threats to the vital interests of the United States and its allies. These are traditional purposes and they are unlikely to change by 2030. But there are new questions about the future of extended deterrence, assurance, and strategic stability.”

“The triad will be fit for purpose in 2030—assuming the modernization program is sustained and meets the just-in-time schedule. Some slippage is possible, however, not least because of the need to address post-pandemic federal deficits. Moreover, bipartisan support appears to be fraying.”

RED (Russia, China, North Korea)	BLUE (U.S.)	GREEN (U.S. Allies)
“Gone to school” on the U.S. way of war at least two decades ago	Focused elsewhere for most of the last 25 years	Various understanding of the problem posed by Red and its urgency
Developed theories of victory for peacetime (Sun Tzu) and crisis and war (Clausewitz)	No Blue theories of victory; could lose regional war if fought today	No Green theories of victory (relies on Blue) but some clear requirements
Advanced in integrating military (including nuclear) & non-military means	Progress made in defining roles of new capabilities but integration still largely aspirational, ad hoc in crisis	Deterrence adaptation is underway but “integration” is contentious
Seek dominance in cyber, outer space and associated emerging technologies	Committed to “overmatching” capabilities but uncertain about whether strategic stability is possible, desirable	Concerned about being overwhelmed or entangled into new, avoidable forms of competition
Want to undermine and ultimately terminate Blue-Green alliances	Divided over whether, how to increase the role of Green in Blue strategy	Uncertain about Blue commitment to alliance and resolve in crisis, war

“By 2030, the balance of central strategic forces among the United States, Russia, and China may have altered in various ways. But it is unlikely to have changed in a way that fundamentally calls into question the ability of the United States to retaliate in a devastating manner. The U.S. is likely to have a nuclear posture much like today’s force. It is highly unlikely to be larger or more diverse; it may be somewhat smaller and less diverse. Russia will have a fully modernized force that is unlikely to be substantially different from today’s force. China’s force may be double its current size and fully modernized and its precise role and purpose are likely to remain ambiguous. In 2030 there will be significant uncertainties about where all three will be headed with force size and function in the decade to 2040. The imbalance that may be consequential in 2030 is the imbalance we’re beginning to recognize in 2020: the imbalance in strategic thought about the requirements of effective deterrence in the kinds of conflicts we might face in an era of major power rivalry.”

**CGSR workshop summary,
“Fit for Purpose? The U.S. Nuclear Posture in 2030 and Beyond,”
June 8-10, 2020**

“The U.S. strategic toolkit is also becoming more robust. U.S. capabilities are improving as a result of significant investments and a purposeful exploration of emerging technologies. This is primarily a bottom-up process, shaped by technological possibility and funding availability. A top-down process would align investments with operational requirements deriving from a military strategy tailored to the security environment. This would enable a comprehensive portfolio-management approach. That top-down process is largely missing today.”

“Despite a great deal of fluidity and uncertainty, it seems unlikely that the net balance of strategic power and influence will have shifted dramatically in favor of any of the three by 2030. Each will be able to look back on a record of progress in maintaining a credible threat of nuclear retaliation. None should be able to conclude that it is in a position to seize and hold some gain bearing on a vital interest of another.”

**CGSR workshop summary,
“The Next U.S. Strategic Posture of 2030 and the Posture After Next,”
July 8-10, 2020**

21

The landscape of major power rivalry and deterrence has shifted markedly in five years. In 2020, significant new questions have come into focus—for the United States and its allies and also for CGSR.

Big Open Questions in 2020

- Will increased military power and confidence in their theories of victory lead to decisions by Presidents Putin or Xi to challenge U.S. interests more directly with conventional military provocations?
- Are Presidents Putin and Xi motivated to re-make regional security orders on their watch or are they content to leave decisive action to their successors?
- Will U.S. leadership remain committed to the defense of the regional security orders in Europe and Asia?
- Will the coronavirus pandemic have a net dampening effect on the risks of conflict by reminding leaders of shared interests and the need to cooperate? Or will it intensify political confrontation and raise the risks of conflict?

Next Questions for CGSR

- How much progress have the United States and its allies made in developing the needed theories of victory?
- In a net assessment framework, how much progress have they made in adapting and strengthening regional deterrence architectures?
- How do Russia and China assess their progress?
- What changes, if any, are needed in the U.S. strategic posture (both nuclear and more broadly) in anticipation of multiple decades of major power rivalry and military flashpoints?

New Regional Challengers and Challenges

Let us again recall the strategic landscape in 2015. North Korea had recently claimed to have tested a thermonuclear device and was continuing to conduct long-range missile tests while also deploying new capabilities; these developments brought new questions about both deterrence and assurance. Iran had agreed to the Joint Cooperative Plan of Action. In South Asia, nuclear tensions were rising, driven by Pakistan's aggressive nuclear build up and provocative political actions by the newly elected Modi government in India; at the same time, there were new concerns about the potential future effectiveness of outside powers in managing suddenly emerging military crises. In 2015, there was also evidence of enduring concern about possible breakdown of global nuclear order via "tipping points" and regional "proliferation cascades" within and perhaps across regions.

To guide our work on this second thrust area, we composed the following high-level framing questions:

- How do nuclear-arming regional challengers (also known as rogue states) think about and prepare for conflict with the United States and its allies?
- Is nuclear stability in South Asia eroding?
- Are we crossing a global "tipping point" that might bring a "proliferation cascade"?
- How do regional actors hedge against future competition?
- What implications follow U.S. strategies for deterrence, assurance, and strategic stability?

Our work has led us to the following answers. These should be seen as tentative or as working hypotheses, as they are all subject to further analysis and testing.

1. The Democratic People's Republic of Korea (DPRK) and Iran appear to have thought carefully about conflict with the United States and its allies and about how to use current and future capabilities to achieve their aims. They pose a potential existential threat to U.S. allies. The DPRK threat to the U.S. may not be existential—but it is becoming severe. The United States and its allies must further adapt their theories of victory for this challenge.

2. Deterrence has not stabilized in South Asia. The United States seems largely disengaged from needed actions to reduce risk, especially of miscalculation in crisis. Benign U.S. neglect could result in catastrophe.
3. Tipping points may be taking shape in Northeast Asia, the Middle East, and even Europe. The global nuclear order could look very different a decade or two hence. The United States should strengthen assurance of allies by strengthening extended deterrence.
4. Regional actors hedge against strategic uncertainty by developing latent capabilities for future competition. Some hedge in the nuclear domain but many more hedge with national science and technology (S&T) postures designed for timely response to breakout by an adversary or the loss of a security guarantor.
5. These challengers and challenges are not, in fact, new. But each has taken on significant new characteristics in the last five years—for the worse. A new policy focus on major power rivalry should not preclude sustained focus on these threats.



Workshop on deterring a nuclear-arming North Korea.

1 The DPRK and Iran appear to have thought carefully about conflict with the United States and its allies and about how to use current and future capabilities to achieve their aims. They pose a potential existential threat to U.S. allies. The DPRK threat to the U.S. may not be existential—but it is becoming severe. The United States and its allies must further adapt their theories of victory for this challenge.

Key Developments in DPRK Nuclear Policy and Posture

- Nuclear posture evolving from “catalytic” to “assured retaliation”
- Nuclear policy combines deterrence and “responsibility”
 - Nuclear weapons “round off the combat posture”
 - Explicit targeting of U.S. forces, U.S. allies, U.S. homeland
- Commitment to future arms control as an equal to U.S.

Reactions by U.S. Allies

- RoK: sharply rising anxiety, new nuclear debate
- Japan: high anxiety about being in crosshairs



Kim Jong Un:

Porcupine? Leave him alone and live in peace?

Or badger? Leave him alone and find ourselves at war because he has attempted to re-make the regional order?

“War is an armed clash, which can be unleashed only against a weak one. None can now make little of us...Thanks to our reliable and effective self-defense nuclear deterrence, the word ‘war’ no longer exists on this land, and the security and future of our state is guaranteed forever.”

Kim Jong Un address to military veterans, July 2020

DPRK can now be “more zealous for our important projects aimed to repay the U.S. with actual horror and unrest for the sufferings it has inflicted upon our people” with “shocking” and “offensive” measures to chart “a new path” with the United States and South Korea.

2020 statements by Kim and other government officials

Enduring Challenges

- Working for the best while preparing for the worst
- Mustering the needed trilateral deterrence cooperation
- Sustaining at least the minimum necessary cooperation from the five permanent members of the United Nations Security Council (also known as the P5)

New Challenges

- Deterring after red-line failures
- Assuring after red-line failures
- Restoring momentum for deterrence adaptation while denuclearization is stalled

The Needed U.S. Response

- Continuity of U.S. purpose and effort
- Continuity of effort to work with allies to strengthen and adapt regional deterrence architectures to meet new challenges
- More empowerment of allies in those architectures
- Continued rejection of Mutual Assured Destruction and thus continuation of a role for homeland missile defense—but future size and function a topic of rising interest (what is required to negate?)
- A military strategy built on a better understanding of the types of conflict Kim Jong Un may initiate and of his strategies for employing nuclear threats, demonstrations, and attacks to coerce his enemies and achieve war termination on his terms

The Open Question About Iran's Nuclear Ambitions

- Does Iran want nuclear weapons?
- Or does it want to be moving in that direction, and to be seen to be doing so, but not wanting to pay the various prices of attempting to cross the threshold?

Iran's Capabilities

- Nuclear posture advancing up latency curve
- Nuclear policy a matter of leadership disagreement
- Nuclear capabilities pursued as part of a “mosaic” deterrence strategy of missiles, WMD

"The lesson of Desert Storm is don't mess with the United States without nuclear weapons."

K. Sundarji, former chief of staff of the Army of India, 1992

"North Korea's strategic approaches to advancing its interests in both peacetime and war are closely intertwined. Most of their provocations occur in the Gray Zone and intentionally remain below the retaliation threshold. Since Pyongyang is unlikely to survive in a protracted war, North Korea wants to undermine the alliance structure and to achieve its objectives as soon as possible."

**CGSR workshop summary, "'Compete, Deter, and Win' in a Trans-Regional Perspective: On Meeting the New Challenges of Extended Deterrence,"
February 26-27, 2019**

"The North Korean threat to South Korea and Japan is clear and compelling, as North Korean leaders regularly warn that Seoul and Tokyo are 'in our nuclear cross-hairs.' The North Korean nuclear threat to the United States is still taking shape, but is widely expected to grow significantly in the coming years. Debate continues about whether North Korea seeks only to safeguard the regime or intends to exploit its new nuclear capabilities to try to achieve a political settlement on the peninsula consistent with its long-term goal of reunification on its terms."

**CGSR workshop summary, "Strategic Weapons in the 21st Century,"
January 26, 2017**

"North Korea's leadership is confident that the strategic balance is in the midst of a major re-alignment. Historically, it has seen itself as at the mercy of U.S. 'hostile policies.' Its sense of vulnerability to U.S. power follows from its own sense of domestic political vulnerability and its failure in the contest with the South. Accordingly, North Korean leaders decided to compete with the United States on deterrence and compellence strategies and capabilities. They continue to assess the existing balance as unfavorable for the DPRK. But they see deterrence as becoming more stable and opportunities for compellence becoming more numerous with the growth in North Korea's nuclear and missile forces."

CGSR workshop summary, "Strengthening Deterrence for 21st Century Strategic Conflicts and Competition: Accelerating Adaptation and Integration," November 14-15, 2017

2

Deterrence has not stabilized in South Asia. The United States seems largely disengaged from needed actions to reduce risk, especially of miscalculation in crisis. Benign U.S. neglect could result in catastrophe.

South Asian Context

- Nuclear risks are rising:
 - Steady growth in inventories of weapons-usable materials, access to sensitive items, personnel, transportation, and deployed weapons and delivery systems
 - Unwarranted confidence of leaders in their ability to identify and manage risks and to manage crises in the nuclear shadow
 - Reduced expectation of timely crisis intervention by U.S. and United Nations Security Council
- LLNL has supported U.S. government-sponsored Track 2 dialogue for over 20 years
 - Objective: to reduce nuclear risks stemming from unauthorized access/use and from nuclear war
 - For 20 years, Track 2 has discussed concepts of deterrence, safety, security, and use control (using non-sensitive information)
 - In recent years, table top exercises have been used to explore potential problems with nuclear security and deterrence stability

Key Insights

1. India and Pakistan view deterrence very differently and lack shared concepts of escalation, crisis management, and war termination.
2. Mixing conventional and nuclear systems increases the risks of miscalculation and unintended escalation.
3. Short-range weapons increase the risks of unauthorized use, miscalculation, and escalation.
4. Sea-based systems carry special risks of accidents and unauthorized use.
5. Neither country is prepared for the additional risks associated with cyber, space, and other emerging technologies.
6. Neither country is willing to slow the pace of nuclear development in light of a better understanding of risks.

3

Tipping points may be taking shape in Northeast Asia, the Middle East, and even Europe. The global nuclear order could look very different a decade or two hence. The United States should strengthen assurance of allies by strengthening extended deterrence.

In Northeast Asia, the feared tipping point associated with North Korean nuclearization has not materialized (yet?). South Korea and Japan have not followed suit. But they are increasingly anxious, with each new North Korean step. So far at least, U.S. efforts to assure both that the U.S. nuclear umbrella remains effective despite changed circumstances have proven sufficient to address rising allied anxieties.

In the Middle East, an Iranian decision to cross the threshold between “moving closer” and having a nuclear force would likely be a tipping point to broader nuclear proliferation. Saudi Arabia, Egypt, and Turkey, among others, might seek to build or acquire nuclear weapons. Some states might prefer dependence on others rather than acquire their own capabilities, thus potentially leading to new relationships of extended deterrence in and into the region.

Even in Europe, a future proliferation cascade cannot be ruled out. U.S. withdrawal from NATO, in combination with new forms of Russian nuclear pressure, could lead one/some/many states in the region to seek national capabilities as a way to safeguard their strategic autonomy.

“The whole region is a mess...The only positive I see in the region is the P5+1 agreement with Iran....These countries are becoming tribal...the nation-state is devolving into tribal identities...and sectarianism.”

**Emile Nakhleh, CGSR lecture,
“ISIS, the Middle East, and U.S. Policy:
Regional Reflections Since the Arab Spring,” July 6, 2016**

“Iraq is a broken actor. A playing field, not a player.”

**F. Gregory Gause, III, CGSR lecture,
“The Trump Administration and the Middle East,”
December 17, 2018**

“Iran possesses the knowledge and capabilities that provide a foundation for reconstituting its nuclear weapons program. We don’t, obviously, know where Iran’s intentions lie.”

**Will Tobey, CGSR lecture,
“The Iran Nuclear Archive,”
May 8, 2019**



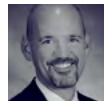
“Maximum pressure combined with Iran’s long-term systemic economic weakness has created a situation in which they are very near economic collapse. This is not the same thing as political collapse. All too often... we equate them...You still have to overcome the guys with the guns...the Iranian government is prepared to kill and the Iranian population, thus far, has not been prepared to die.”

**Richard Nephew, CGSR lecture,
“Maximum Pressure on Iran: Where do we go from here?”
January 7, 2020**



“Modern scholars of East Asia suggest nuclear weapons give us reasons to be optimistic about peace in the region. These views are wrong. Nuclear affairs in contemporary East Asia, characterized in important ways by multipolarity and complexity, will have a net destabilizing effect on the region. Rather than mitigate the problems of a rising China and a fluid multipolarity, the second nuclear age will exacerbate those challenges in Asia. The concept of nuclear and strategic triads helps to structure analysis of these dynamics. Additionally, diversification of strategic systems erodes the distinction between nuclear and other weapons creating more slippery slopes of escalatory pathways and tangled red lines that undermine that basis for stability under the stability instability paradox. China plays a central role in this newly challenging strategic environment as Beijing sits at the fulcrum of several triangular security dilemmas in the strategic realm and possesses a diverse set of strategic capabilities. Asia’s strategic future looks grim.”

**Chris Twomey, CGSR lecture,
“Asia’s Complex Nuclear Geometry,”
September 22, 2016**



Rafael Loss and William Bookless observe Ivanka Barzashka, Ariel Petrovic, and other wargamers determine a move at the Project on Nuclear Gaming workshop.

4 **Regional actors hedge against strategic uncertainty by developing latent capabilities for future competition. Some hedge in the nuclear domain but many more hedge with national S&T postures designed for timely response to breakout by an adversary or the loss of a security guarantor.**

Latent nuclear potential is paired increasingly with “strategic latency” of other kinds. Many states hedge against strategic surprise and the possibility that they may need high-level military capability—and quickly. Nuclear hedging has been well studied. Increasingly important, but less well studied, is hedging in other domains of potential military advantage—for example, space launch, space ops, cyber defense, biotech, and directed energy. In these sectors, the hedge generally resides in the private sector in the form of commercial activities that could be turned to new purposes and scaled up in time of need. This form of hedging, and its potential stabilizing and destabilizing implications, merits continued close scrutiny by the United States and its allies/partners.



“People imagine, develop, and use technology to achieve ‘wonderful things,’ but they also use technology to pursue harmful objectives. Insecurity, anger, jealousy, and greed are just as likely to motivate technological innovation as love, compassion, creativity, and altruism. Judgments about whether technological feats are wonderful or terrible are themselves highly subjective—one person’s big scientific breakthrough can just as easily turn out to be another person’s political, military, or economic disaster.”

**Zachary Davis and Michael Nacht,
CGSR book, *Strategic Latency: Red, White, and Blue,*
Managing the National and International Security
Consequences of Disruptive Technologies, February 2018**

“Despite the global spread of nuclear hardware and knowledge, at least half of the nuclear weapons projects launched since 1970 have definitively ended short of the bomb, and even the successful projects have generally needed far more time than expected. To explain this puzzling slowdown in proliferation, the key is the relationship between developing country politicians and their scientific and technical workers. By undermining workers’ autonomy and spirit of professionalism, developing country rulers unintentionally thwart their own nuclear ambitions.”

**Jacques Hymans, CGSR lecture, “Botching the Bomb: the Self-Defeating
Behaviors of Proliferant States,”**

December 16, 2015



5

These challengers and challenges are not, in fact, new. But each has taken on significant new characteristics in the last five years—for the worse. A new policy focus on major power rivalry should not preclude sustained focus on these threats.

Big Open Questions 2020

- What impact will the pandemic have on the internal dynamics of North Korea and Iran?
- Positive case: creates opportunities for cooperation; possible “Chernobyl moment” leading to regime opening or change
- Negative case: reinforces antagonism and opens door to opportunistic aggression
- Will the U.S. election return U.S. diplomacy to prior mainlines or might there be further movement away from alliances, multilateralism, and a leading crisis management role?

Next Questions for CGSR

- What regional tipping points and proliferation cascades should most concern us today and what more can be done to mitigate risks?
- What can Track 1.5 dialogue contribute to the improved effectiveness of Track 1 risk reduction strategies?
- What can and should be done to mitigate the risks of competitive strategic latency?



Shinji Yamaguchi, Kestutis Paulauskus, Kang Choi, and Janis Berzins at a workshop comparing extended deterrence in Europe and the Asia-Pacific.

Toward Integrated Strategic Deterrence

Let us again recall the landscape of 2015. The Department of Defense had produced strategies for cyber and space and had become focused on defining and explaining the military significance of these domains. “Cross domain deterrence” was coming into broad usage as a way to begin to think about their fit into broader defense strategy. There was also a growing recognition that the needed integration of capabilities and strategies would require more than simply fitting these new domains into a pre-existing framework.

To guide our work on this third thrust area, we composed the following high-level framing questions:

- What are the essential features of competition and conflict in the new domains of cyber space and outer space?
- How should the risks of cross domain deterrence be understood and managed?
- Can improved integration of the tools of deterrence be accomplished?
How?

Our work has led us to the following answers. As before, these should be seen as tentative or as working hypotheses, as they are all subject to further analysis and testing.

1. Competition in cyber space and outer space is intense and growing more so.
2. Competition cuts across many usual boundaries: between the public and private sectors, between commercial and military actors, between national and multilateral organizations.
3. Conflict in the new domains is well underway. But so far at least it is conspicuously non-lethal in character. This raises questions about the utility of deterrence below the lethal threshold and the practice of deterrence above that threshold.
4. Competition and conflict in these new domains bring risk. Bold action in cyber and/or outer space very early in a conflict intended to achieve decisive effects may instead incite unwanted escalation. Integration may lead to new forms of competition that can be neither avoided nor won.

5. “Cross domain deterrence” fell into disfavor as an organizing concept because it came to be seen as a poor substitute for developing the needed defensive and offensive capabilities in the two new domains and the needed strategic thought about them.
6. Integration offers many potential benefits to the United States and its allies. It adds to the non-nuclear means of deterrence, defense and, if necessary, escalation. It helps to restore the promise of decisive effects no longer available at the conventional level of war, while also reducing reliance on nuclear threats where they may not be credible.
7. The barriers to integration are numerous. They include secrecy, stovepipes, and limited bandwidth.
8. To secure the potential benefits of integration, the all-domain toolkit must be enabled with superior situational awareness, command and control, and execution.
9. Integrated strategic deterrence requires much more than the integration of cyber and space into existing deterrence strategy. It requires a comprehensive view of all of the capabilities relevant to shaping an adversary’s escalation calculus and of the elements of coherent strategy.



2019 workshop on challenges of winning regional conventional wars against nuclear-armed adversaries.

1

Competition in cyber space and outer space is intense and growing more so.

“Multiple simultaneous technological revolutions are likely to significantly impact the character of war. The competitor that best harnesses these technologies will have the advantage in fighting and winning the wars of the future.”

**Chuck Lutes, CGSR Occasional Paper,
Getting Innovation Right,
September 2019**

“Cyber and space-based capabilities have become critical to how the United States and other countries deploy and operate their conventional and nuclear forces. This has provided military and political leaders with new opportunities, but it has also revealed new vulnerabilities in systems and deterrence strategies.”

**CGSR workshop summary,
“Assessing the Strategic Effects of Artificial Intelligence,”
September 2018**

“Developments in cyber space, outer space, and artificial intelligence (AI) technologies are already significantly influencing the military balance between strategic competitors. Currently, there seems to be a degree of symmetry in U.S., Russian, and Chinese thinking about new domains and new technologies—all focus on space and cyber dominance in some way....Achieving dominance or gaining the advantage in the new domains and with new technologies while minimizing risks will prove to be more difficult than it was during the Cold War. The United States is heading toward a critical debate regarding the amount of restraint the U.S. should exercise, while simultaneously capturing the benefits of multi-domain strategic long-term competition.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**

“The next 20 years of warfare may be a little more transformative than the last 20...today we may or may not be at the cusp of faster change.”

**Michael O’Hanlon, CGSR lecture,
“Forecasting Change in Military Technology, 2020-2040,”
December 18, 2018**



“It’s not just that these technologies are operating independently. It’s the cumulative impact of these technologies operating together...The ability of governments to figure this out is impeded by the fact that many of these capabilities are being developed by different parts of the government. Different organizations are developing these capabilities for different purposes. So, you have stove piping, you have fragmentation, and this makes it much harder to have that cumulative net assessment of how these technologies might affect strategic stability vis-à-vis one country or another. Part of the reason for this is that some of these technologies—cyber, conventional counter force—are not being developed for their applications in the nuclear realm. They’re being developed for their utility in conventional warfighting or counterterrorism...But then it is much harder to draw a white line between capabilities that will affect strategic stability and ones that will not.”

Greg Koblentz, CGSR lecture,

“Strategic Stability in the Second Nuclear Age,”

August 10, 2016



“The Trump administration’s concept of ‘compete, deter, and win’ includes competing with all tools of national power to gain lasting advantages, deterring actions at the local and strategic level that threaten us or our allies, and being capable of fighting and winning wars against all enemies while also achieving a sustainable and lasting peace. However, the emergence of new capabilities in cyber and space over the past two decades has radically altered the nature of competition and the requirements for designing and executing successful strategies to achieve these goals.”

Benjamin Bahney and

Jonathan Pearl,

CGSR Occasional Paper,

Space Strategy at a Crossroads:

Opportunities and Challenges for 21st Century Competition,

May 2020

“Official U.S. government definitions of cybersecurity have usually been framed in terms of the protection of computers and digital networks from attacks, and ensuring the availability, integrity, and confidentiality of data. While this conceptual framework is appropriate for discussing events such as the Russian hacking of emails and probing of election infrastructure, it falls short for describing other more overt activities which actually leverage the intended uses of information technologies and target human minds and social processes rather than computers, exploiting cognitive biases, social cleavages, and other flaws in society to achieve pernicious objectives.”

**CGSR workshop summary,
“Cyberspace, Information Warfare, and International Security,”
February 27-28, 2018**

“We are in constant contact, persistent engagement; we are not deterring activity to protect national interests. I think risk is increasing, our exposure is increasing, and we need to do more. There are ways to do more—in architectures, in partnerships, in thinking of unity of effort and this concept of how to manage risk... Technology could give us relative advantage today, but we no longer can count on enduring advantage.”

**Bob Butler, CGSR lecture,
“Cybersecurity: Changing the Model,”
August 15, 2019**



“Cyber doom rhetoric is precisely that—it’s rhetoric, which means that it’s a tool of persuasion. The use of these kinds of scenarios with this kind of rhetoric is particularly meant as an appeal to fear meant to call attention and motivate action.”

**Sean T. Lawson, CGSR lecture, “The Politics of Cyber Security Threats:
Beyond Cyber Doom Rhetoric,”
May 17, 2017**



“A lot of the characteristics of cyberspace, that it is highly uncertain, that there’s a problem with attribution, that there can be a lot of actors, that it’s very quick. Those characteristics theoretically suggest that it should be a highly escalatory domain. But the reality is that we have seen almost no escalation from cyberspace.”

**Jacquelyn Schneider, CGSR lecture,
“Thresholds in Cyberspace,”
January 14, 2020**



2

Competition cuts across many usual boundaries: between the public and private sectors, between commercial and military actors, between national and multilateral organizations.

“Cyberspace—and thus the cyber domain—is heavily influenced and controlled by the private sector. In addition to activities involving purely government or military assets, adversaries often use vulnerabilities found in software code, false accounts on social media networks, or critical infrastructure owned and operated by private companies. Technical experts and civil society also play important roles through internet governance institutions and technical standards selection.”

“...entering into formal or informal partnerships with the private sector allows governments to achieve defense in depth, to operate globally and at scale, and extends their ability to exert sovereignty and project power. PPPs [public-private partnerships] provide states with freedom of maneuver in cyberspace, situational awareness, and innovation to stay ahead of competitors....PPPs can bring mutual benefits, but also come with risks and challenges.”

**CGSR workshop summary, “Strategic Competition in Cyberspace:
Challenges and Implications,”
June 10-11, 2019**



Brad Roberts with STRATCOM J5 Major General Nina Armagno at CGSR Space Symposium.

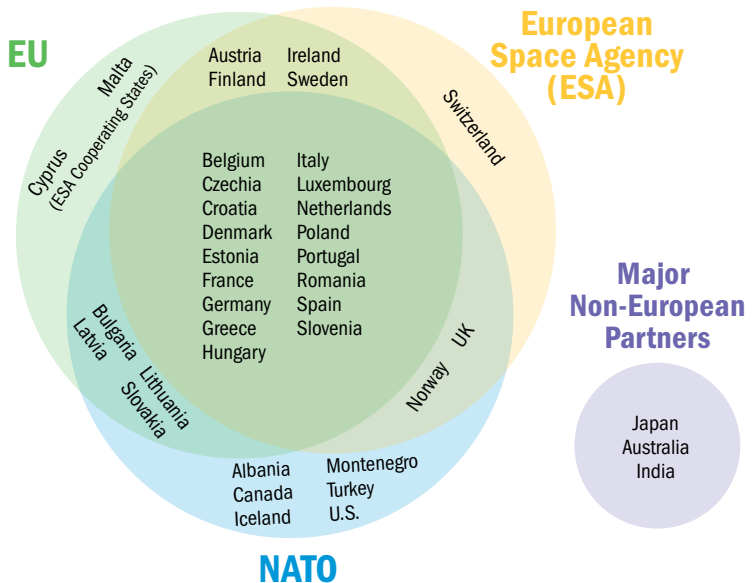
U.S. AND EUROPEAN ALLIES, IN THE SPACE CONTEXT

DoDD 3100.10 (4 Nov. 2016) “expand space-related cooperation with international partners ... Proactively seek opportunities to cooperate with allies and selected international partners in developing space architectures and in designing, acquiring, and operating military space systems.”

Satellites Solely Owned or Operated

Allied State	Satellites
USA	883
Japan	79
UK	60
India	57
ESA	49
Canada	37
Luxembourg	33
Germany	33
Spain	19
France	13
Australia	12
Netherlands	12
Italy	11
Norway	8
Turkey	8
Finland	5
Denmark	5
Switzerland	3
Sweden	2
Greece	2
Bulgaria	2
Austria	1
Belgium	1
Latvia	1
Lithuania	1
Poland	1
Slovakia	1

Source: Union of Concerned Scientists Satellite Database



“When we have conversations with other governments about biological risk, we largely focus on what governments can do or how they can develop regulations or standards. Those things are critically important, but the technology and the people who are driving it and the people with the money who are driving it are in growing numbers outside of governments or even government sphere of influence. So when we were thinking what we could be doing as a non-governmental organization that might fill a gap in this space, we were thinking how can we actually influence other countries to do the right thing but also how can we influence technology stakeholders themselves to take action.”

Elizabeth Cameron, CGSR lecture,

“Promise and Peril: Advancing Biosecurity Innovation,”

August 21, 2018



3

Conflict in the new domains is well underway. But so far at least it is conspicuously non-lethal in character. This raises questions about the utility of deterrence below the lethal threshold and the practice of deterrence above that threshold.

“Offensive cyber operations could provide significant strategic value to state-actors. The availability of offensive cyber capabilities expands the options available to state leaders across a wide range of situations.... offensive cyber capabilities can both be an important force-multiplier for conventional capabilities as well as an independent asset. They can be used effectively with few casualties and achieve a form of psychological ascendancy. Yet, the promise of offensive cyber capabilities’ strategic value comes with a set of conditions. These conditions are by no means always easy to fulfill—and at times lead to difficult strategic trade-offs.”

**Max Smeets, CGSR lecture,
“The Strategic Promise of Offensive Cyber Operations,”
January 19, 2018**



“New vulnerabilities—someone can enter your home, business, or secure area and steal your most important stuff—and never physically be there. Equally concerning, an insider can do that while authorized to be there—by you—because you trust him. Here’s another troubling characteristic of the 21st century environment. While it isn’t new that the U.S. homeland is at risk from potential adversaries, it is new that the homeland is at risk below the nuclear threshold, from conventional and cyber weapons, and therefore from a larger pool of potential adversaries.”

**Robert Kehler, CGSR Occasional Paper,
Getting Innovation Right,
September 2019**



Fiona Cunningham of George Washington University with participants in a workshop on cross domain deterrence.

4

Competition and conflict in these new domains bring risk. Bold action in cyber and/or outer space very early in a conflict intended to achieve decisive effects may instead incite unwanted escalation. Integration may lead to new forms of competition that can be neither avoided nor won.

"Multi-domain strategic competition will have a corrosive impact on crisis stability...with new technologies, there are more significant risks of a perceived first strike advantage, fears of a preemptive attack, or beliefs that the conflict cannot be managed and, therefore, escalation is inevitable."

CGSR workshop summary,

"Multi-Domain Strategic Competition: Rewards and Risks,"

November 13-14, 2018

"It is not just U.S. strikes on China and Russia that can be escalatory, it's Chinese or Russian strikes on U.S. assets in a conventional conflict that can be escalatory. The driver of these escalation risks is something that I term 'entanglement.' Entanglement describes the inactions between the nuclear and non-nuclear domains."

James Acton, CGSR lecture,

"Escalation Through Entanglement,"

September 6, 2018



"As the U.S. and China and Russia pursue these technologies—including military tech capabilities leveraging cyberspace (including offensive cyber), outer space (including counter space capabilities), long-range strike (including prompt Global Strike), missile defense (including in the future, the potential for hundreds of relatively capable interceptors as well as directed energy systems) and AI, we're likely to see three interrelated effects. First, we'll see the creation of slippery slopes from peacetime to Gray Zone to crisis conflict and the escalation of conflict. Second, we'll see the erosion of fire breaks, specifically fire breaks between conventional and nuclear and between so-called theater and strategic attacks. ...Third, and most broadly, we'll see an undermining of the strategic stability associated with the nuclear balances between U.S.-Russia and U.S.-China....The question an attacker might ask is, 'Well, if I go in cyber and space early, is the other side really going to escalate with conventional let alone nuclear, because they have some fried computers and dead robots in outer space?' It's going to look like a high leverage, low-risk move early in conflict if not in crisis....The United States needs to take dramatic action to reduce the vulnerability of the

most vital parts of its critical infrastructure to cyber attack. That is hard. There's some progress. In my estimation as a country we are becoming more vulnerable, not less vulnerable, with time....It's possible to make fundamental change in a 10 to 20 year time frame. It's not going to happen quickly."

James Miller, CGSR lecture, "Adapting the U.S. Approach to Strategic Deterrence to Address Rapid and Accelerating Technological Change,"

February 5, 2018



Demetrius Walters of DTRA, Michael Gaines of CGSR, and Cecil Haney, former Commander of U.S. Strategic Command.

5

“Cross domain deterrence” fell into disfavor as an organizing concept because it came to be seen as a poor substitute for developing the needed defensive and offensive capabilities in the two new domains and the needed strategic thought about them.

“In the development of our strategic thought about cyber’s place in military strategy, we’re roughly a decade in. By analogy, we’re where nuclear strategy was in 1955. We’ve done perhaps 10 percent of the needed new thinking.”

**Not for attribution comment, CGSR workshop,
“Cyberspace, Information Strategy, and International Security,”
February 2018**

“The U.S. military space community has been slow to develop the strategic thought needed for the new era—dangerously so. New strategic thought requires an understanding of the unique characteristics of the space environment and of military practice and national policy, past and present. But it requires so much more: a sound understanding of the nature of long-term competition, of potential 21st century conflicts and their potential escalation dynamics, and of the intersection of technological change and operational art.”

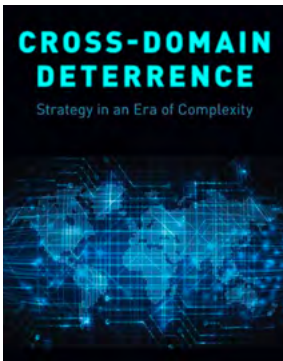
**Jay G. Santee, Major General, U.S. Air Force (retired),
May 2020**

“China and Russia have done a lot of thinking about all-domain escalation, but U.S. and allied officials and strategists need to gain a deeper understanding of how adversaries intertwine escalation concepts into the cyber and space domains, as well as how the United States and allies should view and manage escalation in different domains....In both Europe and in the Asia-Pacific, a threat of a conventional fait accompli cannot be seen in isolation from Gray Zone challenges or developments in the nuclear or cyber domains. The United States and its allies need to face challenges to all domains sequentially or concurrently. Another significant challenge is how to devise a plan that is sufficiently escalatory to thwart a fait accompli attempt, while simultaneously offering an off-ramp for the adversary.”

**CGSR workshop summary, “‘Compete, Deter, and Win’ in a Trans-Regional
Perspective: On Meeting the New Challenges of Extended Deterrence,”
February 26-27, 2019**

“While thinking about escalation in a multi-domain environment, one critical question is whether escalation is domain specific (cyber, space, conventional, nuclear) or effects specific. While in some cases the effects matter, the tool matters (i.e. nuclear use) as well. The escalatory potential of different capabilities during different phases of conflict is also not sufficiently understood. Communicating multi-domain advantage to adversaries also seems difficult without a clear advantage in specific domains and corresponding misperceptions.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**



“The concept of cross-domain deterrence (CDD) emerged near the end of the George W. Bush administration as policymakers and commanders confronted emerging threats to vital military systems in space and cyberspace. The Pentagon now recognizes five operational environments or so-called domains (land, sea, air, space, and cyberspace), and CDD poses serious problems in practice.”

**Jon Lindsay and Eric Gartzke, CGSR lecture,
“Cross-Domain Deterrence in an Era of Complexity,”
May 28, 2019**



Chuck Lutes, Madelyn Creedon, and Mike Elliott at a CGSR workshop on adapting and strengthening deterrence.

6

Integration offers many potential benefits to the United States and its allies. It adds to the non-nuclear means of deterrence, defense and, if necessary, escalation. It helps to restore the promise of decisive effects no longer available at the conventional level of war, while also reducing reliance on nuclear threats where they may not be credible.

The Case for Integration

- There are significant operational advantages to be gained with better integration.
- Russia and China have integrated with updated strategy, new operational concepts, organizational reform
- In Red theories of victory, imposing cost and risk is central and both domains offer many opportunities
- To effectively counter Red coercion and escalation strategies, Blue must be able to limit vulnerabilities in these domains and exploit Red vulnerabilities.

BEYOND “CROSS DOMAIN” AND “ALL DOMAIN” TO “INTEGRATED STRATEGIC DETERRENCE”



NOT BY NUCLEAR MEANS ALONE

The Needed All-Domain Response to the All-Domain Problem

BLUE DETERRENCE TOOLKIT	POTENTIAL IMPACT ON RED ESCALATION CALCULUS
A solid political foundation of unity of purpose within the alliances	Reduces expectations of a successful challenge to an alliance interest
A favorable balance of conventional forces	Reduces expectations of a successful fait accompli
Resilience-plus in cyber and space	Reduces expectations of invisible capitulation
Improved conventional strike capabilities	Increases credibility of Blue effort to seize the initiative
A tailored missile defense posture, regional and homeland	Takes “cheap shots” off table, reducing likelihood of blackmail success
A “tailored nuclear component”	<ul style="list-style-type: none"> Forward deployed/deployable deterrence signals collective resolve of U.S. and allies U.S. strategic triad ensures retaliation
Information strategies and mechanisms to support political narrative	Reduce expectation of compliant decision-making



Bethany Goldblum of the University of California, Berkeley and Corey Hinderstein of NNSA talking with a PONI member at a CGSR-hosted PONI event.



The barriers to integration are numerous. They include secrecy, stovepipes, and limited bandwidth.

Some barriers are common to cyber space and outer space:

- Secrecy, excessive and otherwise
- Separate structures, cultures
- A military command structure that limits the capacity for integration for multi-domain, transregional conflict
- Essential partners (allies, private sector) are outside the U.S. government
- Underdevelopment of strategic thought

Some challenges are unique to the domain:

Cyber Framing Challenges

- Confusion about purpose of integration
 - To use cyber (and other means) to deter cyber attack?
 - To use cyber to deter all forms of attack?
 - To use cyber for defense and offense but not deterrence, where it seems impractical?
- Confusion about different roles of cyber in “peacetime,” crisis, and war
- Disagreements about the necessary and appropriate relationships among cyber conflict, cyber security, information confrontation, public and private sector roles, civilian and military roles, and internet governance nationally and internationally
- Concerns about embracing cyber offense and the security dilemma
- Different terms of reference associated with the “logic of war” and the “logic of intelligence work”

Cyber Deterrence Integration Issues

- “Persistent engagement” below the lethal threshold appears to contribute little to deterrence
- “Defend forward” may offer some deterrence benefit against an adversary probing for evidence of such defenses.
 - But preparations for covert action in crisis and war contribute little to deterrence as they are not revealed and thus cannot influence adversary decision calculus

Cyber conflict

- Reversibility of cyber attacks gives more space for military interaction, and potentially coercion, below the level of armed attack
- Cyber expands the bounds of conflict into more civilian spaces and into the Gray Zone
 - Case that this is stabilizing: increases the efficiency of tacit bargaining without full military exchange
 - Case that this is destabilizing: cyber attacks in crisis and war that are carefully calibrated for signaling both resolve and restraint may easily be misunderstood and thus lead to unwanted escalation

“The Cyber Solarium Commission report advances us another step. But rather than choose a strategy, they seem to have papered over the hard choices and chosen to try to do everything. This cannot work over the long term.”

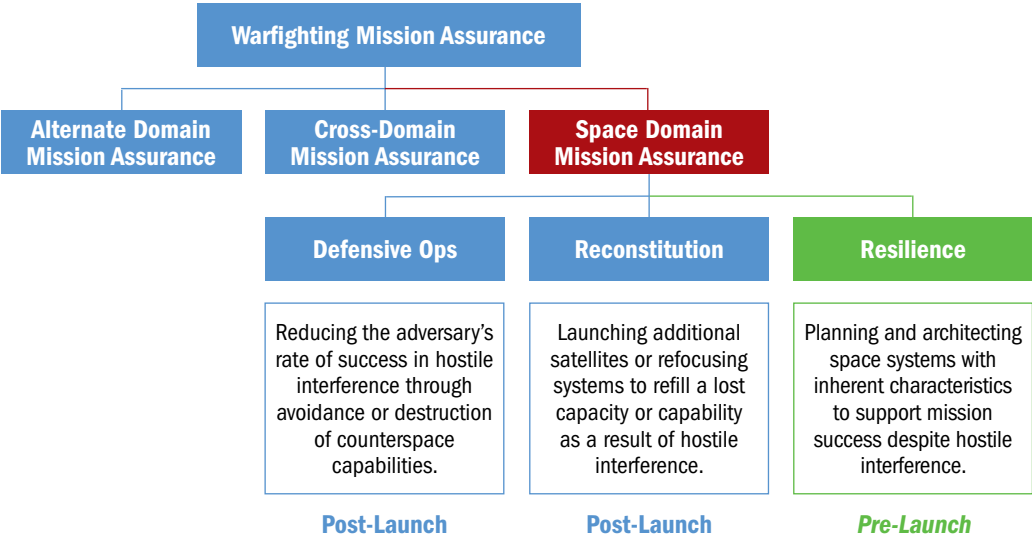
Not for attribution comment, CGSR workshop, “Nuclear Risk Reduction in an Era of Major Power Rivalry,” February 2020

“Now that we have a strategy for war in space, we need a strategy for space in war.”

Not for attribution comment, CGSR workshop, “Space in 21st Century Conflict,” January 2018

The Challenges to Effective Space Integration

THE SPACE DOMAIN AND DETERRENCE STRATEGY



Big Open Questions 2020

- Will the progress made on these questions stall out?
 - DoD leadership turnover regularly brings a new set of priorities
 - The pandemic will compel a dominant focus on sustaining readiness over the medium term
 - The spike in federal deficit spending will bring budget cuts that impair innovation
- What roles can stakeholder institutions play in consolidating gains and accelerating progress?

Next Questions for CGSR

1. How should insights gained into integrated all-domain deterrence inform the Blue theory of victory?
2. And vice versa: How should the Blue theory of victory inform further strategic thought in the separate domains?
3. How should they inform the strategy for long-term competition?
4. How should they inform risk reduction strategies?



Elsa Kania of the Center for New American Security speaking at a CGSR event.



Bonnie Triezenberg of the RAND Corporation at the 6th Annual CGSR Deterrence conference.



Robert Einhorn of the Brookings Institution at a workshop on nuclear risk reduction.

The Future of Long-Term Cooperative Measures to Reduce Nuclear/Strategic Dangers

To address the dangers of the nuclear era, the United States has pursued from the start a comprehensive approach encompassing military means to deter threats and political, diplomatic, and economic measures to reduce and, where possible, eliminate them. It has also sought international cooperation toward these ends. In 2015, there was rising concern that such cooperative measures were approaching a fork in the road. New questions were forming about the future of bilateral U.S.-Russian nuclear arms control, given Russian rejection of proposals for a follow on to New START. New questions were forming about the difficulties of maintaining the nonproliferation regime through the 50th anniversary in 2020 of its entry into force. More new questions were forming about whether pragmatists or abolitionists would dominate disarmament diplomacy. And more new questions were forming about how to deepen or at least sustain some cooperation with Russia and China on nuclear risk reduction.

To guide our work on this fourth thrust area, we composed the following high-level framing questions:

- What are those dangers? Are they static or intensifying?
- What are the prospects for additional bilateral nuclear reductions with Russia?
- What is the future of the nonproliferation regime? Of nuclear disarmament?
- Are new approaches to cooperative threat reduction possible? To nuclear risk reduction more broadly?



Brad Roberts explaining Russia's approach to regional war at King's College London.

Our work has led us to the following answers. As before, these should be seen as tentative or as working hypotheses, as they are all subject to further analysis and testing.

1. Nuclear danger emanates from military rivalry among the three (Russia, China, and the United States), from unstable deterrence in South Asia, and from potential nuclear tipping points in Northeast Asia, the Middle East, and Europe. Nuclear terrorism also remains an important source of danger.
2. Additional strategic danger emanates from new forms of military competition in cyber space, outer space, and biotech. Dangers are intensifying across the board.
3. The long process of bilateral U.S.-Russia nuclear reductions is coming to an end, whether or not New START is extended. Arms control must adapt to the more multipolar strategic context and the more multidomain character of modern warfare, or it is likely to die. Adaptation may require jettisoning many legacy concepts about the form and substance of arms control.
4. The nonproliferation regime is under severe stress and in need of sustained U.S. leadership.
5. The disarmament discourse is shifting unhelpfully and must be joined more effectively by U.S. leaders.
6. For risk reduction strategies generally, the time is ripe for innovation.
7. The time is especially ripe in pandemic-struck 2020 for innovative new approaches to reduce the risks emanating from biology.
8. Track 1.5 dialogues can be a useful driver of innovation.
9. These dialogues reveal a rising debate, both domestic and international, about whether strategic stability remains the right focal point.
10. The biggest impact on nuclear risk would come from reducing the risk of regional conventional wars between nuclear-armed states, as they present plausible even if unlikely pathways to inadvertent, unwanted, and intentional escalation.
11. U.S. leadership has waned and others are trying to fill the gap, sometimes with agendas contrary to U.S. interests. Many await a renewal of U.S. leadership. Others are content to say that arms control's moment has passed.

1

Nuclear danger emanates from military rivalry among the three (Russia, China, and the United States), from unstable deterrence in South Asia, and from potential nuclear tipping points in Northeast Asia, the Middle East, and Europe. Nuclear terrorism also remains an important source of danger.

Nuclear Dangers 2020

- The major power dimensions as discussed above
 - Potential nuclear flashpoints in regional conventional war
- The “rogue state” component
 - DPRK: a nuclear-arming regional rival
 - Iran: climbing the capability curve post-Joint Comprehensive Plan of Action
- South Asia
 - Intensifying competition, rising instability
- General regional challenge
 - Proliferation by U.S. allies in Northeast Asia and Middle East more possible than before
 - A possible “cascade” in Europe driven by a U.S.-generated “tipping-point”
- Enduring problems with the safety and security of nuclear materials, technologies, and expertise
- Sharpening questions about the long-term viability of the non-proliferation regime

“The lack of preparation for a global pandemic despite repeated expert warnings is a strong reminder that even if the risk of use of nuclear weapons is less than sometimes feared, it is essential to act now to reduce the risk to an absolute minimum.”

Lewis Dunn, CGSR Occasional Paper, Major Power Rivalry and Nuclear Risk Reduction: Perspectives from Russia, China, and the United States,

2020



2

Additional strategic danger emanates from new forms of military competition in cyber space, outer space, and biotech. Dangers are intensifying across the board.

Other Strategic Dangers 2020

- Risk of unintended escalation in cyber space and outer space arising from the desire and need to gain early and decisive advantages
- Major uncertainties associated with biotech
- Unintended 2nd and 3rd order effects from intensifying competition in the new domains
- Miscalculation by U.S. adversaries that democracies' tendency to avoid risks—or their distraction with other problems—means they will not defend their interests if challenged
- Loss of cooperating with Russia to manage shared risks and the failure to build common cause toward this end with China

“We can’t just assume that every advance in science and technology is going to directly lead to an increased threat, it varies. I think you have to really try and tease out what are the complex combination of factors that might increase this threat and in other areas that actually might not change the threat at all.”

Kathleen Vogel, CGSR lecture, “Biotechnology and Bioterrorism: Re-Conceptualizing Bioweapons Threats,”

September 4, 2015



“By virtue of their speed, altitude and lateral maneuver capability, hypersonic weapons will make attack warning and attack assessment challenging, thereby making escalation more likely. The fact that U.S. hypersonic weapons will be designed to target an opponent’s medium-range mobile conventional ballistic missiles implies that they may have some capability to threaten their mobile ICBMs [intercontinental ballistic missiles]. Therefore, China, Russia, and the United States should think more carefully about the potential destabilizing impact of hypersonic

weapons to avoid potential miscommunication, misunderstandings, and misperceptions in the event these weapons ever are used in war.”

Dean Wilkening, CGSR lecture, “Hypersonic Weapons and Strategic Stability,”

June 18, 2020



“In spite of the growth in non-compliance [with the chemical and biological arms control agreements] or potential for surprises, support for the treaties remains critical as a contribution to overall U.S. leadership and the nation’s deterrent posture. They provide legal frameworks for taking action against violators (as has been done in reprisals against Russia for their Novichok use). But the emerging threat situation presents new challenges to the Department of Defense that the treaties cannot address, especially in prosecuting the strategy shift to great power competition called for in the National Security Strategy and National Defense Strategy.”

Miriam John, CGSR lecture, “Challenges to the Viability of International Agreements on Chemical and Biological Weapons,”

June 24, 2020

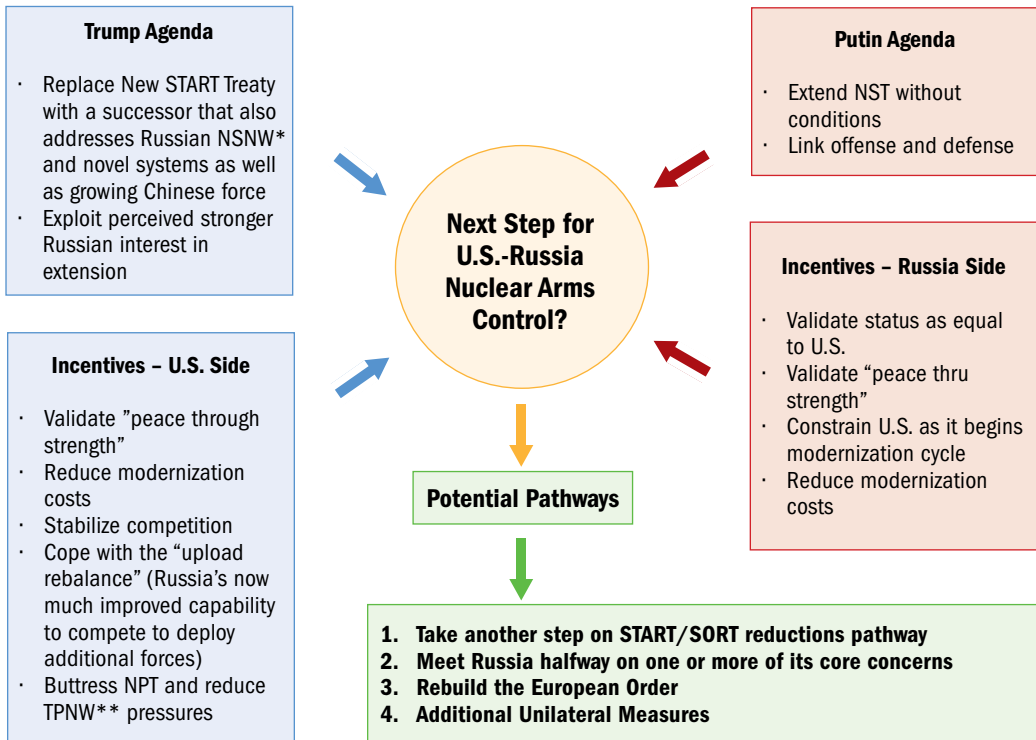


Steve Kreek briefs a visiting student group.

3

The long process of bilateral U.S.-Russia nuclear reductions is coming to an end, whether or not New START is extended. Arms control must adapt to the more multipolar strategic context and the more multidomain character of modern warfare, or it is likely to die. Adaptation may require jettisoning many legacy concepts about the form and substance of arms control.

THE NEAR-TERM ARMS CONTROL CHALLENGE



*Non-Strategic Nuclear Weapon

**Treaty on the Prohibition of Nuclear Weapons

THE LONGER-TERM ARMS CONTROL CHALLENGE



Arms Control Must Adapt to Survive

- To a security environment more multipolar (or polycentric) than bipolar
- To forms of strategic competition other than the nuclear
- To the divergence of thinking about strategic stability—its possibility, its requirements

Obstacles to the Needed Adaptations

- Russia's near complete defection from the legacy regime
- U.S. political division, disagreement about strategic stability, prolonged strategic atrophy
- China's abiding reluctance



Michael Griffin: "The concept of... parity is intellectually bankrupt."

Given difficulties on the bilateral track, we should expect a rising debate about the potential virtues of additional U.S. unilateral measures to reduce nuclear dangers. Recall the 2011 argument of Shultz, Kissinger, Perry, Nunn that reliance on nuclear deterrence “is becoming increasingly hazardous and decreasingly effective” and their call for a “joint enterprise among nations” for “a safer and more stable form of deterrence.”

By 2020, it seems clear that Russia and China are unwilling to join in that “joint enterprise.” Thus, there will be a continuing discussion of what more the United States can and should the U.S. do to alter its practice of nuclear deterrence with the aim of reducing nuclear dangers.

At the end of Cold War, it significantly altered alert practices and force posture. Since then it has reduced the role and number of weapons in defense strategy and increased the deterrence roles of non-nuclear means, such as missile defense. Advocates of additional U.S. steps cite potential risk reduction benefits but governments have had to take a net assessment approach of real risks reduced and new risks created.

So far at least, additional measures have been rejected on the judgment that, on balance, they would add rather than reduce risk:

- Further de-alerting might reduce some risks of accidental launches but would create an August 1914 risk of competitive re-alerting
- Eliminating ICBMs might also reduce risks of accidental launches but would increase the risk that U.S. retaliatory threats would be dismissed
- No first use might ease international tensions but would increase the risk of actions jeopardizing vital U.S./allied interests by non-nuclear means
- Removing dual-capable fighter-bombers from Europe and their bombs might reduce some risks of theft or accident but would increase the risk of nuclear coercion by Russia and possible Russian nuclear escalation in regional war

“The United States is now left with a choice between not pursuing further reductions at this time and pursuing reductions unilaterally (and the latter is a choice that looks unsound in the current security environment)....Absent political transformation in the international political system of some fundamental kind, a world in which nuclear-armed states relinquish their weapons would likely be prone to arms races at the conventional level, as states exploit their different power potentials for relative gain. Any large-scale war would likely generate new nuclear demands and a competitive pursuit of nuclear (re-)armament.”

CGSR workshop summary,

“Taking Stock: Nuclear Disarmament and U.S. Disarmament Diplomacy,”

May 2017

“The Russians are drawing linkages from arms control to other issues—missile defense, third-country nuclear forces, conventional forces in Europe, long-range conventional strike—and the way they designed those linkages you don’t see a Russian effort to solve their problems. These linkages basically seem intended to give the Russians reasons to reject further nuclear reductions.”

**Steve Pifer, CGSR lecture,
“U.S.-Russia Relations and the Future of Arms Control,”
December 4, 2015**



“Arms control is central to deterrence strategy.”

**Frank Rose, CGSR lecture,
“The Future of Arms Control and Deterrence,”
February 1, 2016**



“Some argue that unilateral restraint can exert pressure on competitors to do the same. However, there is very little evidence to support this argument as there are several instances where unilateral restraint is not reciprocated by U.S. competitors. There is also a risk that U.S. unilateral restraint can be interpreted as a signal of a lack of resolve. These factors may undermine the case for unilateral restraint as an opportunity that will help to achieve U.S. objectives.”

“A tailored competition that signals both resolve and restraint will demonstrate that the United States will compete to preserve credibility, while securing a stable regional order and existing balance of power. By diversifying military capabilities and building a consensus through dialogue, the United States can favorably manage new forms of competition. Without a viable strategy to seize the benefits of competition and reduce the risks, the United States and its allies should expect a period of high uncertainty about the scope and consequences of multi-domain strategic competition.”

**CGSR workshop summary, “Multi-Domain Strategic Competition:
Rewards and Risks,” November 13-14, 2018**

“Arms control is not dead—fashionable though it may be to proclaim its demise. Arms control is not dead because we humans have gotten used to negotiated restraint as a way to avoid building up arms that are not really useful on a day-to-day basis to defend us and our interests... Concepts that have been tried and proven true over 40 plus years of arms control regimes are still available to us and we should not think we have to throw everything out and reinvent the wheel.”

**Rose Gottemoeller, CGSR lecture,
“Rethinking U.S. Arms Control and Nonproliferation Strategy,”
February 26, 2020**



4

The nonproliferation regime is under severe stress and in need of sustained U.S. leadership.

Context

- In 2020, the NPT turns 50—25 years after indefinite but not quite unconditional extension
- Prospective entry into force of the Nuclear Ban Treaty
- Potential for a nuclear cascade of proliferation among U.S. allies

Challenges

- Coming to terms with the record of multiple failures of multilateral enforcement to deliver full NPT compliance
- Perceived lack of progress on NPT Article VI commitments
- Steady erosion of U.S. leading role and emergence of others with competing agendas
- Politicization of Iran and DPRK policy in U.S. domestic politics
- Piecemeal erosion of allied confidence in U.S. as a security guarantor

Opportunities

- To utilize the review conference to renew support for the treaty, regime, and norm
- To learn lessons from the tailored approaches to North Korea and Iran

“On May 8, 2018, President Trump withdrew the United States from the 2015 Joint Comprehensive Plan of Action, also known as the Iran Deal, and announced the re-imposition of all U.S. nuclear-related sanctions against Iran. Since then, he has alternated between threats of ‘consequences the likes of which few throughout history have ever suffered’ aimed at Tehran and offers for unconditional talks with Iran’s leadership. The administration has also outlined 12 conditions for negotiating a ‘better deal’—conditions that most experts believe Iran will not be willing to meet. Although the administration’s position has been embraced by a number of close U.S. partners in the Middle East, it has been rejected by most of the international community, including all of the other parties to the Iran Deal (China, France, Germany, Russia, and the United Kingdom).”

**Colin Kahl, CGSR lecture,
“The Fate of the Iran Deal,”
August 16, 2018**



“North Korea is on the verge of a strategic breakout that could directly threaten the U.S. homeland.”

**Robert Litwak, CGSR lecture,
“Preventing North Korea’s Nuclear Breakout,”
April 13, 2017**



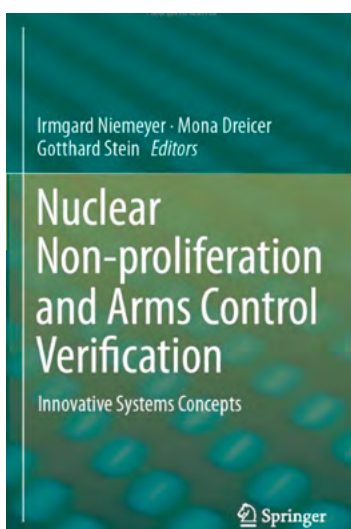
“At a time when the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is facing serious challenges, the collapse or erosion of the NPT would undoubtedly worsen the nuclear and broader international security and energy landscape by undermining the nonproliferation norm it created, disrupting the framework on which the peaceful cooperation on nuclear energy occurs, diminishing future prospects for further arms reductions and disarmament and weakening the security of all states alike, whether or not they possess nuclear weapons.”

**Joseph Pilat, CGSR lecture,
“A World Without the NPT Redux?”
October 24, 2019**



“Nuclear reversal is most likely when states are threatened with sanctions and offered face-saving rewards that help them withstand domestic political opposition. Underlying these negotiations is the shadow of military force. The possibility of military intervention incentivizes states to accept the agreement offered by the United States and end their nuclear pursuit.”

**Rupal Mehta, CGSR lecture,
“Delaying Doomsday: the Politics of Nuclear Reversal,”
February 25, 2020**



“After 50 years of verifying the peaceful uses of the nuclear fuel cycle, the International Atomic Energy Agency (IAEA) has shown that confidence requires a coherent and comprehensive picture of a state’s nuclear-related activities in addition to the evaluation of treaty compliance. Confidence in a world with low numbers (or zero) nuclear weapons will be difficult to achieve with only an incremental treaty-by-treaty approach.”

Mona Dreicer, Irmgard Niemeyer, and Gotthard Stein, editors, book, Nuclear Non-proliferation and Arms Control Verification: Innovative System Concepts, 2020

5

The disarmament discourse is shifting unhelpfully and must be joined more effectively by U.S. leaders.

Challenges

- Rise of “norm entrepreneurs” seeking to “leapfrog” recalcitrant governments
- Frustration of many governments with the “step by step” approach to disarmament
- Continued, intensifying debate about the morality and legality of nuclear deterrence

Opportunities

- To lead a continuing exploration of disarmament conditions
- To take a norms-based approach, emphasizing codes of conduct
- To explore new forms of informal arms control in the new domains
- Use of technology cooperation in verification to promote transparency

“The Nuclear Ban Treaty has impacts on U.S. extended deterrence and assurance policies, especially as the movement targets NATO members and partners. Rather than distancing from the anti-nuclear movement, the deterrence community should open up a dialogue to balance the debate and work on tangential issues of mutual interest, such as risk reduction.”

Heather Williams, CGSR lecture,

“Europe’s Nuclear Future: Deterrence and the Nuclear Ban Treaty,”

July 19, 2018



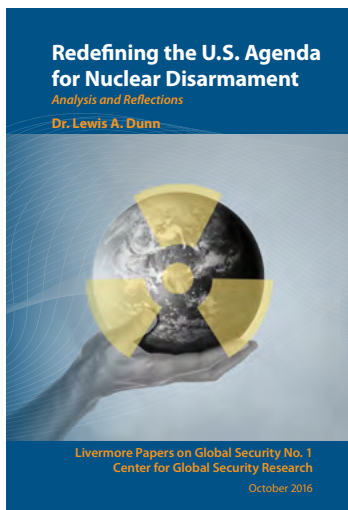
“The common, and still under-appreciated, challenge to U.S. extended deterrence in two regions is posed by the Treaty on the Prohibition of Nuclear Weapons. If the Treaty succeeds in creating widespread perception of nuclear weapons as immoral, it will be difficult for democratic nations to continue using them in their security doctrines. Cohesion of all U.S. allies in opposing the ban might be difficult to maintain.”

CGSR workshop summary, “U.S. Extended Deterrence in Europe and in the Asia-Pacific: Similarities, Differences, and Interdependencies,”

November 13, 2017

“Ethics are at the core of the debate about nuclear weapons and nuclear disarmament. This follows from the special moral repugnance that attaches to nuclear weapons, given their uniquely destructive character and potentially dire consequences of their use, humanitarian and otherwise....But moral opprobrium has not resulted in political consensus about nuclear weapons policy, as amply demonstrated by the variety of views about nuclear weapons, nuclear deterrence, and nuclear disarmament. These differences have been brought back into discussion by the Treaty on the Prohibition of Nuclear Weapons (TPNW) and the requirement now in national capitals to consider ratification and entry into force. The International Campaign to Abolish Nuclear Weapons (ICAN) has made many strong claims on its behalf, including moral ones. Indeed, ICAN has made a strong case that the TPNW is itself a moral imperative. Is ICAN correct?....Is the nuclear Ban treaty a moral imperative? Perhaps it is for those who live by the ethic of pure intentions and who feel responsible primarily for keeping the flame alive. But it is not a moral imperative for those who feel responsible for foreseeable results. It has foreseeable results, both intended and unintended, that are damaging to international order and to international nuclear order. This implies a moral obligation to oppose the Ban and to work to mitigate its consequences.”

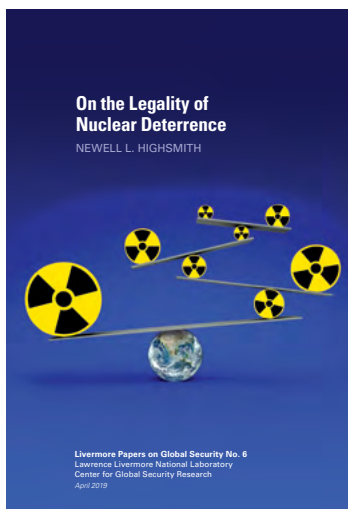
**Brad Roberts, “Nuclear Ethics and the Ban Treaty,”
Nobel Peace Institute, 2018**



“A redefined U.S. nuclear disarmament agenda should adopt a strategy of ‘looking long and throwing short’: articulating on the one hand an American vision of the nuclear world of 2045 (the 100th anniversary of the use of nuclear weapons), and on the other hand pursuing near-term initiatives to reduce today’s nuclear challenges and dangers, and to begin to put in place the building blocks of the look-long vision.”

“The American look-long vision should be a world of 2045 in which nuclear weapons have been strategically eliminated as instruments of statecraft but not completely abolished, dismantled, and eliminated physically.”

**Lewis A. Dunn,
CGSR Livermore Paper No.1,
Refining the U.S. Agenda for Nuclear Disarmament,
October 2016**



“The only realistic means of eliminating nuclear weapons is a verifiable treaty, but, as a practical matter, the international security environment must undergo significant changes before states possessing nuclear weapons will contemplate joining such a treaty.”

“Until those changes occur, nuclear deterrence is not only legal but essential. Indeed, under the current international security environment, the primary objective of nuclear deterrence might even be considered morally compelling.”

Newell Highsmith, Livermore Paper No. 6, On the Legality of Nuclear Deterrence, April 2019



“Remarkably, neither the governments attempting to negotiate with North Korea, not the drafters of the TPNW [Treaty for the Prohibition of Nuclear Weapons], define in any detail what verifiable elimination of nuclear weapons and associated infrastructure would entail, whether in one country or in all....Serious analysis and international discussion of the requirements for verifiably eliminating nuclear arsenals could help depolarize international nuclear politics.”

Toby Dalton and George Perkovich, Livermore Paper No. 8, Thinking the Other Unthinkable: Disarmament in North Korea and Beyond, July 2020

“The cultural or ethical aspects are interesting in that we had been operating under an assumption that almost the entire world was signed up to the same sort of cultural and ethical biases that we had against the use of chemical or biological weapons. Assad sort of put that assumption to rest.”

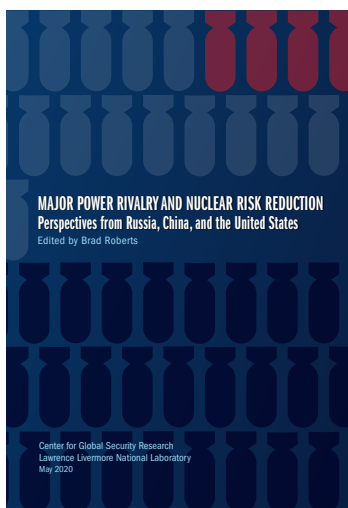
Miriam John, CGSR lecture, “Defense Science Board Task Force on Deterring, Preventing, and Responding to the Threat or Use of Weapons of Mass Destruction (WMD): Chemical and Biological Threats,” April 26, 2017



6

For risk reduction strategies generally, the time is ripe for innovation.

U.S. strategies for reducing nuclear dangers have come to multiple forks in the road. Traditional approaches appear to be losing their efficacy. Competing agendas are taking shape. Fresh efforts are needed to define the decision points ahead, to understand the equities of the United States and other stakeholders, and to marshal the instruments of U.S. power toward agreed goals. In contrast, U.S. strategies for reducing new forms of strategic risk in cyber space, outer space, and elsewhere are still taking shape. This could and should be a time for significant renewal of risk reduction strategies.



“The international debate about nuclear risk has catalogued many different kinds of risk and danger. But two stand out as especially salient: the risk of the nuclear arms race and the risk of employment of nuclear weapons arising out of a conventional conflict. The five nuclear weapon states (NWS) have a special responsibility to contain these risks. They also have a responsibility to try to manage the risk posed by nuclear proliferation. Constructive action by the five is both necessary and possible. But they face many challenges to such action, including the limits on their ability to cooperate given their wariness of each other.”

**Tong Zhao, CGSR Occasional Paper,
Major Power Rivalry and Nuclear Risk Reduction: Perspectives from Russia,
China, and the United States, May 2020**

“Moscow shares the U.S. interest in reducing real military risks that could arise from misunderstandings or lack of communication....but Russia does not want to encourage destabilizing activities by decreasing perceived risks. Moreover, some forms of risk reduction could be seen as the legalization of undesirable practices. Moscow opposes discussion of military risk reduction in outer space and cyberspace because those would be seen as a green light to the militarization of those domains. In

the nuclear sphere Russia sees deliberate U.S. actions as the main risk. If Washington is dismantling arms control and rejecting any limitations with one hand and proposing to have more transparency and manage escalation with the other, it is not a good bargain.”

**Andrey Baklitskiy, CGSR Occasional Paper,
Major Power Rivalry and Nuclear Risk Reduction:
Perspectives from Russia, China, and the United States, May 2020**

“We are at a major crossroads. The bilateral [risk reduction] process has been stymied by many factors, not least the shift to a more multipolar security environment (and thus the need to account for China, among others) and to a more multi-faceted strategic military relationship (and thus the need to account for missile defenses, non-nuclear strike, cyber, space, and counter-space capabilities, among others). The multilateral process has been stymied by the underperformance of the treaty system in dealing with non-compliance by a handful of rejectionist states.”

**Brad Roberts, CGSR Occasional Paper,
Major Power Rivalry and Nuclear Risk Reduction:
Perspectives from Russia, China, and the United States, May 2020**

“The development of international norms in the space domain is lagging, potentially inhibiting efforts to avoid or control unwanted escalation in the future, but the U.S. should work with both allies and private industry to develop and enhance these norms of behavior.”

**CGSR workshop summary,
“Space and the Third Offset,” January 2017**

“International norms and legal frameworks governing space have considerable limitations, many stemming from the evolution of competition in the space domain over the last half century. The lack of effective monitoring and verification instruments loom large over both existing and proposed treaty arrangements. Some observers question the continued relevance of the Outer Space Treaty and associated legal texts, but others remain concerned that attempt to revise such documents would be destabilizing.”

**CGSR workshop summary,
“Space Strategy and Strategic Competition,” December 2019**

“While striving to seize the benefits of multi-domain strategic competition and minimizing associated risks, some policymakers are inclined to automatically reach for the arms control tool given that this helped to mitigate the risks of a nuclear arms race during the Cold War. However, this approach appears to be unfit for current challenges.”

“When it comes to cyber space, formal arms control seems difficult to obtain, while some forms of reciprocal restraint might be tenable. To date, there has not been a massive escalation in the cyber domain or a catastrophic cyber attack, which may suggest that there are lines which countries do not want to cross. The risk that cyber attacks can easily get out of hand (for example, NotPetya or Wannacry) might have a constraining effect by itself. There are also efforts of norm entrepreneurship...In addition, there are private sector efforts to mitigate unintended risks...While there are problems with all of these informal processes, these are necessary discussions and could be the foundation of a future norm for restraint in cyber space.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**

“While cybersecurity discussions at the United Nations date back to 1998, they have only meaningfully progressed since 2011. Through the format of Groups of Governmental Experts (GGEs), a small group of states has advanced a set of international provisions in three key areas: (1) norms and international law, (2) confidence- and transparency-building measures, and (3) capacity-building. Taken together, these areas promise to provide a robust governance structure for state behavior in cyberspace.”

**Elaine Korzak, CGSR lecture, “Between Rhetoric and Reality: Evolving
Cybersecurity Governance at the United Nations,”
February 14, 2017**



Susan Burk, William Potter, and Sharon Squassoni at a CGSR workshop on nonproliferation strategy.

7

**The time is especially ripe
in pandemic-struck 2020 for
innovative new approaches
to reduce the risks
emanating from biology.**

"We are witnessing the rise of emerging and reemerging infectious diseases, and as we look forward, we need to understand why they are occurring with alarming frequency and how these high consequence infectious diseases are impacting global security."

**Gerald Parker, CGSR lecture,
"The Fight Against Emerging and Reemerging Infectious Diseases,"
July 26, 2018**



"The health-security dichotomy that many of us have spent our careers talking about, it does still exist. This head butting between communities, it's really not that hard to bridge that gap if you try and if you bring people to the table that can talk to each other... We are talking about biosecurity as part of the health-security lens. We're also talking about it as part of health system strengthening. And even as part of the sustainable development goals. It's a critical component of all of these things."

**Elizabeth Cameron, CGSR lecture,
"Promise and Peril: Advancing Biosecurity Innovation,"
August 21, 2018**



"We're now exhibiting a new horizon of possibility which is the neuro technological device space. Each and all of these [cyberspace, social sciences, natural sciences, biotechnology, nanotechnology] is engaged by this particular process which is a real term—interactive scientific convergence ... it's a de-siloing of the capability space and it's also a de-siloing of the opportunity space, both for problems and problem resolution and problem generation."

**James Giordano, CGSR lecture, "Brain Science from Bench to
Battlefield: The Realities—and Risks—of Neuroweapons,"
June 12, 2017**



"The independent biotechnology R&D movement will continue to grow and evolve. The creativity and innovation born from these largely community-based efforts should not be hampered by ill-considered regulation. Self-regulation of community labs together with their established ties to government authorities is working well so far."

**CGSR workshop summary, "Independent Biotechnology:
The Innovation-Regulation Dilemma," August 19, 2016**

"You cannot categorically prevent biological weapons development and use. That's part of what makes norms so important...You [also] have to be ready to respond and to do early detection and invest in public health."

**Gigi Gronvall, CGSR lecture,
"Safety, Security, and the Promise of Emerging Bioscience,"
February 23, 2017**



"What might be necessary here is a totally new role for government. If governments could understand that they cannot keep pace with scientific discovery, perhaps they can turn over that role more to the standard setting bodies, but they can help put in place mechanisms to enforce violations of soft law...so in effect what we're saying here is governments can move into a role where they give more enforcement clout to the standards created by industry or scientific bodies or other standard setting bodies and not expect that they're going to keep pace with all of these issues and concerns."

**Wendell Wallach, CGSR lecture,
"Agile and Comprehensive Governance of AI and Synthetic Biology,"
March 1, 2018**



Nancy Hayden of Sandia National Laboratories at the 6th Annual CGSR Deterrence conference.

8

Track 1.5 dialogues can be a useful driver of innovation.

Track 1 dialogue is the official level. Track 2 is the non-official level, usually built around academic exchanges. Track 1.5 is a mix. It brings together academic and think-tank experts, retired officials and military leaders, and current officials and military leaders participating in their private capacity. To get beyond talking points to true strategic dialogue, Track 1.5 has had a steadily rising value since the end of the Cold War. Its value in the South Asian context has already been discussed in a preceding section.

Lessons from Track 1.5 Dialogue with Russia

- Putin's rejection of the legacy regime as an instrument of containment is not universally shared
 - Some interpret the March 2018 speech introducing novel systems as the opening bid in a new arms control negotiation
- Unofficial dialogues much lower value than in past:
 - A few Russian institutions are engaged on these issues but with limited scope for independent analysis
 - In most such dialogues, the Russian side is populated with individuals who cannot speak for the government. In Trump era, same can generally be said of U.S. side
 - Russian state narratives are well developed, oft repeated, and rarely challenged by the Russian side in these venues
- Russian narratives blame and shame. Illustrative exchange:
 - U.S.: "Why did Russia reject missile defense-focused CSBMs [confidence and security building measures] in 2010-2011?"
 - Russia: "Because you Americans already have too much of both" (that is, confidence and security)
- Continuing value:
 - Laying the foundation for potential future steps, especially in bilateral arms control
 - Development of the successor generation(s)

Lessons from Track 1.5 Dialogue with China

- China rejects any near-term arms control as an unnecessary restraint and as a violation of nuclear opacity
 - Stated reason: China already practices significant nuclear restraint, unchanged by its build up, and the United States and Russia must cut much deeper before it is necessary or appropriate for China to join
 - Unstated reasons:
 - In the absence of U.S. restraints on missile defense and conventional prompt strike, China is unwilling to cap its nuclear arsenal
 - It sees the burden of transparency as falling on the stronger power and not as a shared obligation
- It has repeatedly moved the “goal posts,” the quantitative force reductions the United States and Russia must complete before China would be ready to join the process
- Two decades of Track 1.5 nuclear dialogue have produced valuable insights for both sides but also failed to resolve many key outstanding issues
- China has repeatedly rejected U.S. calls for Track 1 dialogue
 - This comes despite the recent convergence of thinking outside the Communist Party on the value of strategic stability dialogue with the U.S.
 - This was one of a number of factors that led the Department of Defense to terminate its sponsorship of the bilateral U.S.-China Track 1.5 process



Wes Spain, Henrietta Toivanen, and Julie Beeston at a CGSR workshop.

9

These dialogues reveal a rising debate, both domestic and international, about whether strategic stability remains the right focal point.

The National Discourse

- 1990s and early 2000s: central focus on instability presented by nuclear-arming rogues and ambition to stabilize these emerging deterrence relationships with BMD
- July 2001: Bush administration set out a “strategy for stability” after the Anti-Ballistic Missile (ABM) Treaty withdrawal but rejected Russian concerns about strategic stability on argument that relationship is not adversarial and thus not based on deterrence
- 2009: Obama administration put primary focus on strategic stability (as opposed to deterrence) in its view of the necessary relationships with Russia and China
 - Though it did not offer a definition, its discourse focused on traditional concepts of crisis and arms race stability
- Trump era: divergence of thinking, emerging “camps”:
 - Strategic stability is an acceptable concept but needs a new label given close association with Obama era
 - Strategic stability has been used as a reason not to do the right things on missile defense so should be set aside; a stable world is one in which the United States has full freedom of maneuver
 - Strategic stability is the right concept but Russia and China reject U.S. concepts and past approaches so we need another organizing principle for strategic cooperation as well as independent action consistent with U.S. concepts
 - The threat to stability is not American strength but American weakness and the solution comes through competition for strategic dominance

The International Discourse

- A brief moment of U.S.-Russia agreement in 1991 (agreed statement)
- Beginning in 1990, rising Russian concern about the impact of U.S. BMD on strategic stability
- In 2000s, concerns intensified with ABM withdrawal, Conventional Prompt Global Strike (CPGS), Bush effort to “move nuclear weapons out of the foreground and into the background,” NATO expansion, and Iraq War

- In 2000s, China joined Russia in these concerns, with complaints about U.S. pursuit of Absolute Security at expense of others
- Obama administration called for sustained, substantive, high-level dialogue on strategy that produced little
 - China rejected
 - Russia joined but meetings were few and unrewarding
- In Trump era:
 - U.S.-Russia dialogues have continued episodically and apparently unproductively
 - No U.S.-China strategic-level dialogue
 - Putin and Xi 2019 joint statement condemning U.S. pursuit of Absolute Security

“The United States should think simultaneously in terms of both near and long-term objectives. Engagements on strategic stability between the United States and Russia exist, but they have not been effective and are largely antagonistic. Frank discussion, including on redlines, may be the best means to abate miscalculation in the current security environment.”

**CGSR workshop summary,
“Rethinking Approaches to Strategic Stability in the 21st Century,”
February 2017**



Vincent Manzo, John Warden, Sugio Takahashi, and Park Chang Kwoun at a workshop on extended deterrence.

10

The biggest impact on nuclear risk would come from reducing the risk of regional conventional wars between nuclear-armed states, as they present plausible even if unlikely pathways to inadvertent, unwanted, and intentional escalation.

In the current security environment, the nuclear danger the United States can do the most to reduce in the near term is the risk of nuclear employment in a regional conventional war involving a U.S. ally that has gone sufficiently badly for one side or the other that it resorts to nuclear attack.

To reduce the risk of adversary nuclear use, the United States and its allies must strip away whatever confidence adversary leaders might have in their “escalation calculus” or benefit, cost, and risk—that is, they must develop and implement a Blue theory of victory. Implication: deterrence is a risk reduction strategy.

To reduce the risk of U.S. resort to nuclear use, the United States and its allies must so compose their military forces as to have to rely on nuclear deterrence only in those extreme circumstances when vital interests are in jeopardy and all other means of self defense have been exhausted (precisely the circumstance in which the threat to employ nuclear weapons ought to be credible, thus enabling deterrence). Implication: excessive reliance on nuclear deterrence is not a risk reduction strategy.



Young professionals from the UK's Atomic Weapons Establishment attending a CGSR cross domain deterrence workshop.

11

U.S. leadership has waned and others are trying to fill the gap, sometimes with agendas contrary to U.S. interests. Many await a renewal of U.S. leadership. Others are content to say that arms control's moment has passed.

Big Open Questions 2020

- What role does the United States see for itself in reducing nuclear dangers?
- A leadership role, exercised through bilateral and multilateral processes, based on mutual reciprocal restraint?
- Or a more independent role, eschewing leadership, and leaving to others residual efforts to reduce nuclear/strategic dangers?
- What impact might the pandemic have on the political will of major and minor powers to cooperate for the common good?

Next Questions for CGSR

1. Are there potential points of convergence in strategic thought among Russia, China, and the United States (and its allies) to guide the adaptation of arms control strategy?
2. Can regional arms control contribute something useful to reducing military dangers?
3. What can Track 1.5 dialogues bilaterally and trilaterally contribute to Track 1 objectives?
4. How should traditional U.S. strategies for assuring allies be adapted to meet new challenges?



CGSR workshop on new technical approaches to treaty verification.

The Future of Long-Term Competitive Strategies

In 2015, U.S. leaders were beginning to appreciate the fact that the leaders of Russia and China had proven unwilling to acquiesce to a world order dominated by the United States and had already for decades been competing to assemble the means to resist and if necessary defeat any injury the United States might attempt to inflict on them. Those U.S. leaders began to think about the nature of strategic competition and about the challenges of competing successfully over the long term. They began by reaching back to prior U.S. approaches to long-term strategic competition. These included the competitive strategies adopted in the middle of the Cold War.

To guide our work on this final thrust area, we composed the following high-level framing questions:

- What are competitive strategies?
- What are the challenges of long-term competition in the 21st century security environment?
- What goals should guide the U.S. approach to strategic competition?
- How can the United States and its allies enhance their competitive positions?



Jacek Durkalec, Michael Markey, and Mona Dreicer.

Our work has led us to the following answers. As before, these should be seen as tentative or as working hypotheses, as they are all subject to further analysis and testing.

1. Competitive strategies were developed in the 1970s and 1980s with the goal of breaking out of the Cold War stalemate by channeling competition onto areas of relative U.S. advantage. These strategies built on and adapted thinking developed early in the Cold War about the means and ends of containment.
2. In the current security environment, the sources of competition are numerous—geopolitical, ideological, economic, and military-technical. In the military-technical realm, competition is intensifying in the new domains (cyber, space, information) and also in the “old” domains of conventional war and nuclear deterrence. In the S&T realm, the U.S. competitive advantage is not what it once was.
3. China is the primary long-term strategic competitor. But in the near to medium term, there are also other important competitors.
4. There are many potential goals of strategic competition: superiority, recovery, and “second to none,” chief among them. In setting a goal, second and third order effects must be considered. The pursuit of strategic dominance may result in a net erosion of U.S. and allied security. Moreover, such goals imply we are competing *against rivals* rather than *for something*. We should be competing to enable a Blue theory of victory.
5. To become more competitive, the United States and its allies must “out-partner” their adversaries. This requires a sound understanding of the necessary partners in the new environment as well as a U.S. strategic narrative that appeals to them.
6. To become more competitive, the United States and its allies must also “out-think” their adversaries. This requires also something more strategic than the sporadic ad hoc capability enhancements by stakeholder institutions. It requires a national strategy for institutional renewal.
7. The United States and its allies must also be able to monitor and assess the state of the balance of power and strategic influence as it shifts over time. Toward this end, they should jointly develop an up-to-date strategic net assessment methodology.

1

Competitive strategies were developed in the 1970s and 1980s with the goal of breaking out of the Cold War stalemate by channeling competition onto areas of relative U.S. advantage. These strategies built on and adapted thinking developed early in the Cold War about the means and ends of containment.

Cold War Origin

- Objective: to prevail in the Cold War, as opposed to merely contain the Union of Soviet Socialist Republics (USSR)
- Means:
 - Shift long-term competition onto areas of Western advantage and Soviet disadvantage
 - Present USSR with choice between expensive, unsuccessful competition and capitulation

1980s	2020s
Bipolar world	Multipolar world
Competition primarily military-technical	Competition more multidimensional
U.S.S.R. weak, U.S. strong	China not weak, U.S. not as strong as before
Strong U.S. political resolve	U.S. political paralysis

“Broadly construed, competitive strategies seek to leverage a nation’s strengths against an adversary’s weaknesses to advantageously shape a competition. One of a larger set of influence strategies, these strategies were experimented with by the Department of Defense during the Cold War. More recently, DoD explored the related concept of dissuasion. While neither is universally applicable nor substitutable for grand strategy (the “what”), competitive strategies (the “how”) can help inform defense resource allocation, force posture, and associated choices to more favorably manage United States interests in the emerging international security landscape. While not a panacea, a return to competitive strategies could prove an effective way for the United States to balance competing regional security objectives and to advance key national interests.”

**Jason Ellis, CGSR paper,
“Seizing the Initiative: Competitive Strategies and Modern U.S. Defense Policy,”
January 2016**

2

In the current security environment, the sources of competition are numerous—geopolitical, ideological, economic, and military-technical. In the military-technical realm, competition is intensifying in the new domains (cyber, space, information) and also in the “old” domains of conventional war and nuclear deterrence. In the S&T realm, the U.S. competitive advantage is not what it once was.

Sources of Competition

- Military-technical
 - Russia, China, and the United States (with its allies) compete to dominate in the 21st century ways of war, in part through improved military use of advanced commercial technologies
- Economic
 - The three compete to improve their standards of living but also to build international trading and financial orders
- Political
 - Russia and China seek fundamental revisions to the regional orders in which they sit and to the global order at a time of rising doubt about the U.S. commitment to those orders and a rejection of the traditional vision of U.S. leadership
- Informational
 - The three compete to shape international and national narratives to their advantage
- Ideological
 - Leaders in Moscow and Beijing now openly contest the liberal democratic model, arguing that illiberal quasi-democracy is the best for organizing the human community globally

Shifting S&T Dimension

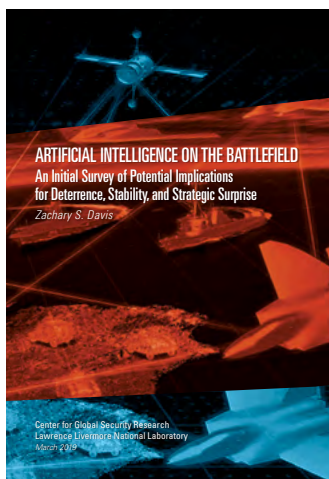
- In the 20th century, technical prowess was essential to American success in both World War II and the Cold War
 - In the 21st century, it remains essential, and there are plenty of opportunities
- But American public confidence in S&T has waned over the decades
 - Moreover, many of the most military promising technologies have been deemed “disruptive” by NGOs and thus may lose political support

- There are many warning signs along the pathway to successful S&T applications
 - Federal R&D investments have been in long-term decline
 - The private sector is ambivalent about the national security enterprise
 - Risk aversion is deeply engrained
 - The federal acquisition system adds complexity, cost, and delay
- In the U.S. nuclear enterprise, technical excellence has not translated readily into an agile infrastructure
 - Policymakers have sought a robust hedge against technical and geopolitical surprise
 - Instead they have had to rely on reserve warheads

“Disruptive Technologies”: Case Studies

Artificial Intelligence

- A technology with broad potential applications
- Disruptive effects in near term have been exaggerated
- Promises to help restore U.S. edge at conventional level of war and thus reinforce deterrence
- Long-term competition likely to be both destabilizing and unavoidable



“Evolutionary changes in the logic of regional and strategic deterrence are not new, nor are they necessarily harmful to U.S. national security. Efforts to integrate AI-based technologies into U.S. defense and intelligence strategies reflect the continued innovation and competitive advantages sought in support of U.S. national security policy. Applications of AI that support U.S. nuclear forces and infrastructure, such as command and control, logistics, and stockpile stewardship, serve to reinforce strategic deterrence by bolstering the survivability and credibility of our retaliatory forces.”

**Zachary S. Davis, CGSR Occasional Paper,
Artificial Intelligence on the Battlefield:
An Initial Survey of Potential Implications for
Deterrence, Stability, and Strategic Surprise,
March 2019**

“When trying to assess the strategic effects of AI, direct evidence is in short supply....The technology...is not ready for ‘prime time,’ and will not bring the hoped-for benefits advocated by proponents—at least not in the near term....Technology experts warned that AI is still largely untested and not reliable enough to be released ‘into the wild.’ Data collections are fragile and easily polluted with incorrect information. Moreover, AI has also shown a propensity to both reflect human bias and create surprising distortions on its own...The diverse workshop participants—policymakers, scholars, technical experts, and representatives of various private sector organizations—shared a common view that we are standing at the beginning of a long journey, as we attempt to understand the practical, moral, legal, and public policy implications of AI and as we attempt to shape those factors for the common good.”

**CGSR workshop summary,
“Assessing the Strategic Effects of Artificial Intelligence,”
September 2018**

Additive Manufacturing

- A technology neither controlled nor dominated by the United States
- Likely to have significant economic, social, and security impact
- A potential boon to a modernizing U.S. nuclear complex, offering significant new agility and major cost savings
- A potential boon to proliferators, offering potential shortcuts in the weapons production process



“In a security environment marked by a high degree of technological dynamism, additive manufacturing (AM) stands out for its special significance. The AM field has emerged from infancy, with many new and potential applications in the commercial and military sectors. Its potential impact on nuclear security is a matter of rising debate, with some emphasizing the disruptive consequences of AM competition for international stability and others emphasizing the disruptive benefits for the United States.”

**Bruce T. Goodwin, CGSR Occasional Paper,
Additive Manufacturing and Nuclear Security:
Calibrating Rewards and Risks,
November 2019**

“Cold War successes in innovation cast a long shadow of expectation over the present period. Among Americans there is a widespread optimism that America and Americans excel at innovation and can readily engage military competition to U.S. advantage. This may not be particularly well-founded.”

**CGSR workshop summary,
“Getting Innovation Right in the Strategy for Long-Term Competition,”
April 2019**



Federica Dall'Arche from the Pacific Forum Young Leaders Program.

3

China is the primary long-term strategic competitor. But in the near to medium term, there are also other important competitors.

China's orientation to the United States as a strategic competitor is deeply engrained. Its strategy for long-term competition is fully elaborated and has been in implementation for decades. Its near-term ambitions to recover territories supposedly lost to it during its so-called "century of humiliation" and to return to a position of prominence in a "more harmonious" international order are clear. Its longer-term ambitions are not. Its opposition to the existing regional and global orders is clearly stated.

But in the near to medium term, Russia remains a strategic competitor in both the regional and global contexts. Regional challengers (also known as rogue states) are also competitors in the sense that they are competing to overturn the regional orders defended by the United States. Some Trump administration leaders have also labeled U.S. allies as strategic competitors, arguing that their free-loading on American largesse has been driven by a desire to propel themselves forward at U.S. expense.

"The first priority should be competition in the political and economic domains, where rightly crafted policies can serve both states, as well as others in the region."

"The United States should not fall back on the military strategies of the 1980s, when the U.S. compelled the Soviet Union to compete in ways it could not sustain, but could not afford to neglect lest it be left behind. The China of 2018 is not the Soviet Union of 1982. China can compete wherever it chooses."



"A more competitive military relationship must emphasize preserving the credibility of American conventional power projection in the Asia-Pacific region. This requires judicious restraint, as certain forms of competition may explode China's security calculus and lead it to jeopardize U.S. and allied interests in new ways. A long view of how regional military competition could affect political relations is paramount."

**Michael Nacht, Sarah Laderman, and Julie Beeston,
Livermore Paper No. 5, Strategic Competition
in China-U.S. Relations,
October 2018**

“Driven by China’s economic expansion and friendly U.S. policies towards the international trade regime, policymakers took shelter in thinking that the U.S.-Chinese economic relationship would act as a ballast for relations. However, this is no longer seems to be the case. Chinese actions to privilege native firms and disallow investments in information and communications technology (ICT) reduces the potential for future economic growth and decreases the level of U.S.-Chinese economic engagement. Furthermore, due to the changing U.S. attitudes towards the international trade regime, the U.S.-Chinese economic relationship is no longer reliable for guiding bilateral relations.”

**CGSR workshop summary,
“Emerging Challenges in the China-U.S. Strategic Military Relationship,”
March 28-29, 2017**



Miriam John at the 6th Annual CGSR Deterrence conference.

4

There are many potential goals of strategic competition: superiority, recovery, “second to none,” chief among them. In setting a goal, second and third order effects must be considered. The pursuit of strategic dominance may result in a net erosion of U.S. and allied security. Moreover, such goals imply we are competing against rivals rather than for something. We should be competing to enable a Blue theory of victory.

“The emergence of long-term strategic competition requires that we... foster a competitive mindset...to out-think, out-maneuver, out-partner, and out-innovate adversaries.”

National Defense Strategy (NDS) 2017

“DoD does not appear to have a plan for succeeding in Gray Zone competitions...the NDS asserts that DoD will ‘expand the competitive space’ but offers little evidence of how it will do so.”

National Defense Strategy Commission Report of 2018

“We need to be in a position of dominance by 2028.”

Under Secretary of Defense for Research and Engineering
Michael Griffin, 2018

COMPETING TOWARD WHAT OBJECTIVE?





“To out-innovate strategic competitors, there is a great deal that must come together effectively. We need:

- *realistic, strategy-driven, measurable goals;*
- *a sense of urgency and the means to accurately assess what others are doing;*
- *an integrated approach;*
- *an innovation infrastructure that enables the development, testing, wargaming, and experimentation of concepts and technologies;*
- *the right metrics and measures of success;*
- *a stronger understanding of the role of culture in enabling innovation; and*
- *a rigorous approach to consider the ethical aspects of innovation.*

This is a broad and challenging agenda and requires sustained focus over a long period of time if the United States is to be successful.”

**Paul Bernstein, CGSR Occasional Paper,
Getting Innovation Right, September 2019**

“Even if competition for dominance is already underway, the critical question is whether or not pursuing dominance will produce anticipated and desired results. One of the desired results is to shape and guide the nature of the competition to the U.S. advantage. This entails efforts undertaken to set the rules and norms, as well as rallying support of the allies. Since there is little evidence to suggest that the concept of strategic stability has guided China or Russia’s strategy for competition in these domains and technologies, the establishment of domain-specific norms will remain necessary in preventing a miscalculation or misunderstanding.”

“Deterrence and competition can be complementary if the objective of strategic competition is to re-establish or bolster deterrence. Competition can reinforce deterrence by shifting the balance of power and influence back to the United States and its allies, ensuring a long-term U.S. advantage. Likewise, deterrence may also contribute to competition by managing the unintended risks...Yet, competition and deterrence may be contradictory, especially if the goal of competition is to dominate...Instead of bolstering deterrence, competition may incentivize military challenges and escalation in a conflict.”

**CGSR workshop summary, “Multi-Domain Strategic Competition:
Rewards and Risks,” November 13-14, 2018**

5

To become more competitive, the United States and its allies must “out-partner” adversaries. This requires a sound understanding of the necessary partners in the new environment as well as a U.S. strategic narrative that appeals to them.

“Out-Partnering” with the Private Sector

- Unlike previous eras, the private sector is driving competition and innovation, not the U.S. government (USG)
- To access innovations, USG must know what it wants technology to do, develop relationships with private sector innovators, and set priorities
- Technology is embedded in, and a function of, culture, strategy, economics, history, policy, and luck. Misalignment undermines success.
- The ability to compete depends on a robust national foundation of STEM education, fundamental R&D, and scientific inquiry.

“Out-Partnering” with U.S. Allies

- Allies contribute both capabilities and political capital to the efforts to sustain stable regional deterrence architectures
- They also contribute intellectual capital to the development of strategy

On “The Narrative”

- To join with the United States in partnerships for long-term strategic competition, these partners must be convinced that long-term objectives are shared, that U.S. strategy shows some promise of safeguarding their interests as well as those of the U.S. government, and that their constituents (whether citizens or shareholders) will support the endeavor over the long term
- Some of the current U.S. narrative works against these requirements.

“Further progress in developing public-private partnerships requires more than ad hoc collaboration. Long-term partnerships depend on developing a cadre of people who build bridges between the USG and the private sector. Temporary exchange assignments between government and industry are key to building such bridges.”

**CGSR workshop summary,
“Getting Innovation Right in the Strategy for Long-Term Competition,”
April 2019**

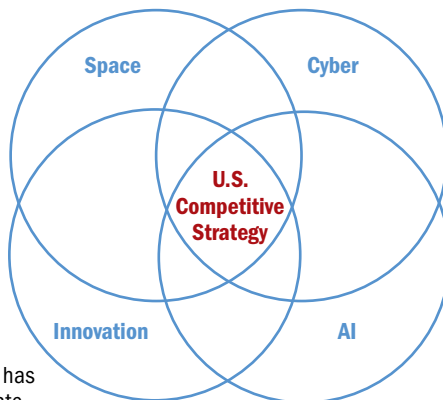
COMPETING BY "OUT-PARTNERING"? LIMITED PROGRESS

Space and Competition

U.S. competitive thinking has been slow to develop as it coasts on past successes. Public-private sector partnership is fundamental to success.

Innovation and Competition

Military innovation in Russia and China has addressed technical, operational, and strategic levels across all domains, whereas U.S. has focused on technical. Public-private partnership again fundamental.



Cyber and Competition

In the family of strategic concepts for cyber, competition is largely absent. Public-private sector partnership is again fundamental.

Artificial Intelligence (AI) and Competition

Competition is well underway but poorly understood in U.S. Public/private sector divergence is pronounced.

"The Department of Defense remains heavily dependent on commercial satellite capabilities both for communications and for imagery. Thus, commercial firms must be engaged appropriately in defense strategy and planning."

**Carissa Christensen, CGSR lecture,
"Commercial Space and the Future of National Defense,"**

March 2, 2017



"The implementation of the National Defense Strategy is increasingly dependent on allies as the United States alone does not possess the resources to meet all of its commitments and to match these growing threats from Russia and China. Preserving and strengthening alliance structures would allow the United States to maintain regional balances of power favorable to its interests."

**CGSR workshop summary, "Winning Conventional Regional Wars Against
Nuclear-Armed Adversaries," November 20-21, 2019**

"Although the U.S. framework for competition entails political, military, and economic dimensions, it is weakly integrated within the U.S. government and with its allies. The United States needs a narrative that is politically appealing to its allies, while also defining what it is competing for and how its allies may contribute to these goals....In order to reap the benefits of strategic competition while seeking to avoid the unintended costs and risks, the United States has to do more to develop a comprehensive, whole-of-government approach that utilizes the U.S. comparative advantages, including its allies."

**CGSR workshop summary, "Multi-Domain Strategic Competition:
Rewards and Risks," November 13-14, 2018**

6

To become more competitive, the United States and its allies must also “out-think” their adversaries. This requires also something more strategic than the sporadic ad hoc capability enhancements by stakeholder institutions. It requires a national strategy for institutional renewal.

The National Defense Strategy of 2017 described a prolonged period of strategic atrophy after the Cold War, as reflected in the loss of focus on strategic issues and the stand down of a lot of institutional capacity and federal investments. In recent years, some stakeholder institutions have resurrected very modest research and analytical capabilities. But the shortfall is still significant. As the National Defense Strategy Commission concluded in its 2018 report, many of the most crippling gaps in the current U.S. defense posture are conceptual in nature. The U.S. defense community has failed to put its intellectual house in order for the problems now present, problems that have been forming for nearly three decades. Today, the mismatch between institutional capacity for new strategic thought and the existing need is stark.

In the 1940s and 1950s, the United States faced a similar need to re-orient strategic thought away from the challenges of World War II and onto the challenge of long-term strategic competition with the Soviet Union and the impact of nuclear weapons on that competition and on modern warfare. The U.S. government created new institutions and invested heavily in new expertise. It took a long-term view. It didn’t bet on past success. A similarly strategic approach is needed today.

“The United States, however, is pursuing a get-started approach to strategic competition, trailing behind Russia and China, which are two or more decades in. Due to this, much remains to be done to put the U.S. intellectual house in order.”

“The U.S. understanding of Russia has largely been lost after the end of the Cold War and needs to be regained. The United States needs a nuanced understanding of Russia’s plans, whether its actions are strategic and thus in accordance with the plans, and what percentage of their actions are strategically directed or only tactical. Although the United States is closing the gap in understanding Russia, it is not doing so at the speed required. The United States continues to be surprised by Russia due to a lack of analytical depth and sophistication, as well as an over-abundance of wishful thinking.”

**CGSR workshop summary,
“Multi-Domain Strategic Competition: Rewards and Risks,”
November 13-14, 2018**

THE LAGGING USG EFFORT TO REDRESS PROLONGED STRATEGIC ATROPHY

CAPABILITY STOOD UP	FUNCTION	2020 STATUS
1947 – NSC, Office of the Secretary of Defense	Improved policy development, implementation	Regular downsizing of strategic functions
1947 – CIA	Improved analytical support	Much reduced focus on strategic issues
1947 – Service authorities for federally funded R&D centers	Support service strategic analysis	Much reduced focus on strategic issues
1947 – Defense Nuclear Agency (DNA)	Support DoD nuclear mission	Closed in 1997, DTRA legacy functions
1961 – Arms Control and Disarmament Agency	Support POTUS in developing nuclear policy	Downsized and folded into State in 1999
1972 – Office of Technology Assessment	Support Congressional oversight	Downsized and folded into Congressional Research Service in 1995
1985 – Senate Arms Control Observers Group	Congressional oversight of strategic nuclear issues	1992, residual ad hoc function in National Security Working Group
Various: increased federal support for research, analysis	1985 data point – OSD and Joint Staff, \$61m; DNA, \$15m	DNA's legacy research support function at DTRA now at \$4m; Minerva grants eliminated

“The United States must come to terms with new Red-Blue-Green triangles in the strategic landscape. While Russia and China are thinking about cross-border wars on their peripheries, the United States is likely to miss these developments. It can learn more from its allies who have studied these problems for years. The United States needs to get better at listening to its allies and understanding their analytical communities and respect what they do.”

CGSR workshop summary,

“Winning Conventional Regional Wars Against Nuclear-Armed Adversaries,”

November 20-21, 2019

“The risks of instability require a better understanding and a strong narrative on how leveraging new domains will serve U.S. strategic ends in the long run. If the United States is going to compete for an advantage, it needs to do it in a way that not only strengthens its military-technological position but also considers political-military aspects of the competition. To compete effectively, more should be done to break down misperceptions on critical issues and to get the public and allies fully on board. Without these actions, the United States will, for example, not be able to leverage support of the private sector—a task that is becoming increasingly difficult.”

CGSR workshop summary,

“Multi-Domain Strategic Competition: Rewards and Risks,”

November 13-14, 2018

“The United States and its Asia-Pacific allies should also more innovatively think about further assurance measures, especially those which follow North Korean missile or nuclear provocations. U.S. allies seem to be asking for the same type of assurances because they do not know what else is possible to ask for. There is concern that if the United States keeps doing the same thing in response to the DPRK nuclear threat, at some point it will run out of assurance strategies, and its credibility may be lost. There is a need to break existing patterns of behavior.”

**CGSR workshop summary, “U.S. Extended Deterrence in Europe and in the Asia-Pacific: Similarities, Differences, and Interdependencies,”
November 13, 2017**

“Cutting across this discussion was an oft-voiced concern about the level of intellectual effort so far invested in designing the U.S. strategic posture of the future and in understanding and mitigating the risks of a strategic free-for-all. Strategy was defined as ‘underdeveloped.’ The policy discussion of hypersonic weapons was defined as ‘under-conceptualized.’ There were warnings of ‘preventable strategic surprise.’ There were calls for ‘a broad analytical agenda’ and (in the words of one participant) ‘an improved ability to listen to others.’ Policymakers were described as ‘uninterested’ in the dangers of arms racing. Together with its allies, the United States needs to become much more competitive with Russia and China in developing the needed strategic thought. This is essential if sound choices are to be made about the future roles, size, and shape of U.S. strategic forces. This is one balance that can easily be restored by 2030—if defense leaders were committed to doing so.”

**CGSR workshop summary,
“The Next U.S. Strategic Posture—and the Posture After Next,”
July 8-10, 2020**



Group photo at 6th Annual CGSR Deterrence conference.



The United States and its allies must also be able to monitor and assess the state of the balance of power and strategic influence as it shifts over time. Toward this end, they should jointly develop an up-to-date strategic net assessment methodology.

Net Assessment in the Cold War

- Assess Soviet vulnerabilities
- Target U.S. strengths on those vulnerabilities
- Anticipate possible Soviet reactions
- Explore possible action-reaction cycles
- Account for bureaucratic and political factors

21st Century Challenges

- Understanding balances in a multipolar context
- Understanding how those balances are shifting, quantitatively and qualitatively
- Having a meaningful concept of “balance”
 - Of power? Of influence? Of self-defense capacity?

Needed Approach

- Go to school on Red (as Red has gone to school on Blue)
 - Understand its approach to conflict with the U.S./allies in crisis and war but also Gray Zone conflict
 - Understand its capability development strategy
- Develop countering strategies and capabilities informed by potential 2nd and 3rd order effects
- Identify, monitor, and periodically assess key indicators, together with allies

“In the emerging strategic competition among Russia, China, and the United States, a net assessment of winners and losers in 2030 is very difficult to construct. It is easier to measure progress by each country in capability development than to measure success relative to an adversary. But progress does not equate with success. Success equates with shifting the balance of power and influence in a decisive way (or with preventing an adversary from doing so). This might be measured in terms of the military ability to seize and hold some gain. Or it might be measured in terms of the ability to set expectations and influence decision-makers to achieve the intended deference to one’s interests without fighting. Whatever its challenges, a strategic net assessment is urgently needed as a guide to strategy and capability development. Properly crafted, it would include all-domain

expertise, clear metrics, allied expertise, both classified and unclassified components, and appropriately tailored war-gaming and red-teaming.”

“Strategic competition brings with it the possibility, even likelihood of arms races. There are already signs of intensifying competition. Russia and China have competed to redress damage they believe the U.S. did to strategic stability during its ‘unipolar moment’; they have also begun to exceed the requirements of the status quo ante. In response, the U.S. is now deciding how to compete. Arms races are not necessarily a bad thing. An arms race may be necessary to redress a new instability or to signal, as an alternative to war, the resolve to stand up to a challenger. But an arms race will likely produce winners and losers. Moreover, in a free-for-all among three powerful actors, everyone might lose. Arms races come with risks—including, in the contemporary case, a heightened risk of crisis stability associated with the apparent need to strike first and hard to gain a decisive advantage early in a mounting crisis. Arms races also bring uncertainty, fear, and temptation. This begs the question: is there an alternative to a strategic free-for-all? The collapse of the legacy arms control regime casts a dark shadow over this question, as does the failure so far to start meaningful dialogues among the three about possible future forms of strategic restraint and common security.”

**CGSR workshop summary,
“The Next U.S. Strategic Posture—and the Posture After Next,”
July 8-10, 2020**

Big Open Questions in 2020

- Will the U.S. be effective and efficient at learning the lessons of its efforts since 2014 to re-focus on major power rivalry?
- Will allies warm further to the U.S. embrace of rivalry—or distance themselves further?
- Do the leaders of Russia and China feel pressured by U.S. competitive strategies in a new way? How will they respond?
- How will the pandemic affect the will in major capitals and the capacity to compete?

Next Questions for CGSR

- Drawing on U.S. initiatives of the last decade, can we define a coherent strategy for long-term competition in an ends-ways-means construct—and then improve it by drawing lessons from experience?
- What are the next major hurdles for the U.S. and its allies as they update strategies for long-term major power rivalry?
- What more is required to “out-think” and redress prolonged strategic atrophy? What analytical processes are required to accelerate innovation and adaptation to the new strategic environment?

Next Steps

In our view, this five-year effort to “challenge thinking...to promote far-sighted actions” (to cite Secretary Moniz) has generated some useful results. Although not fully systematic in our approach, and lacking the capacity to explore very many topics on a deep and sustained basis, we have broken some new ground by probing deeply into some complex emerging problems, generating some of the needed national and international thinking, and informing the broader discourse.

From a CGSR perspective, it is time to refresh our agenda. Some of the questions in front of us are enduring. But others are closed and we can usefully move on to new matters. Our next steps have already been hinted at in the “next CGSR questions” in each of the sections of this report. We look forward to continued engagement with our partners and other interested stakeholders.



Mona Dreicer and Sandra Maldonado.



Bruce Goodwin providing a tutorial on the history of weapons design.



Jacek Durkalec, Brandon Cortino, and Anna Péczeli in the CGSR lobby.



Bruce Goodwin, Vikram Singh, Scott Purvis, Brad Roberts, and Zachary Davis in CGSR lobby.



Linda Villarruel and Katie Thomas.



Wes Spain.










Ben Bahney and Jonathan Pearl.

Livermore Papers on Global Security

	# 1 Lewis Dunn	<i>Redefining the U.S. Agenda for Nuclear Disarmament (2016)</i>
	# 2 Yukio Satoh	<i>U.S. Extended Deterrence and Japan's Security (2017)</i>
	# 3 Dave Johnson	<i>Russia's Conventional Precision Strike Capabilities, Regional Crises, and Nuclear Thresholds (2018)</i>
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In reaction to accelerated erosion of the security environment, in 2015 then-Secretary of Energy Ernest Moniz argued that ‘we must challenge our thinking...in order to permit far-sighted actions that may reduce the chance for surprise and that buttress deterrence.’ Since that time, there has been a steady drumbeat of leadership demand for new thinking about our changed and changing world. Here at Lawrence Livermore National Laboratory, we asked the Center for Global Security Research to step up to this task. This small volume distills the key insights and lessons learned over the subsequent five years. It is a rich harvest. The picture that emerges is of a security environment marked by rapidly growing complexity and risk. But CGSR has also illuminated the many ways in which the United States and its allies and partners can meet new challenges. ”

William Goldstein

Director

Lawrence Livermore National Laboratory

